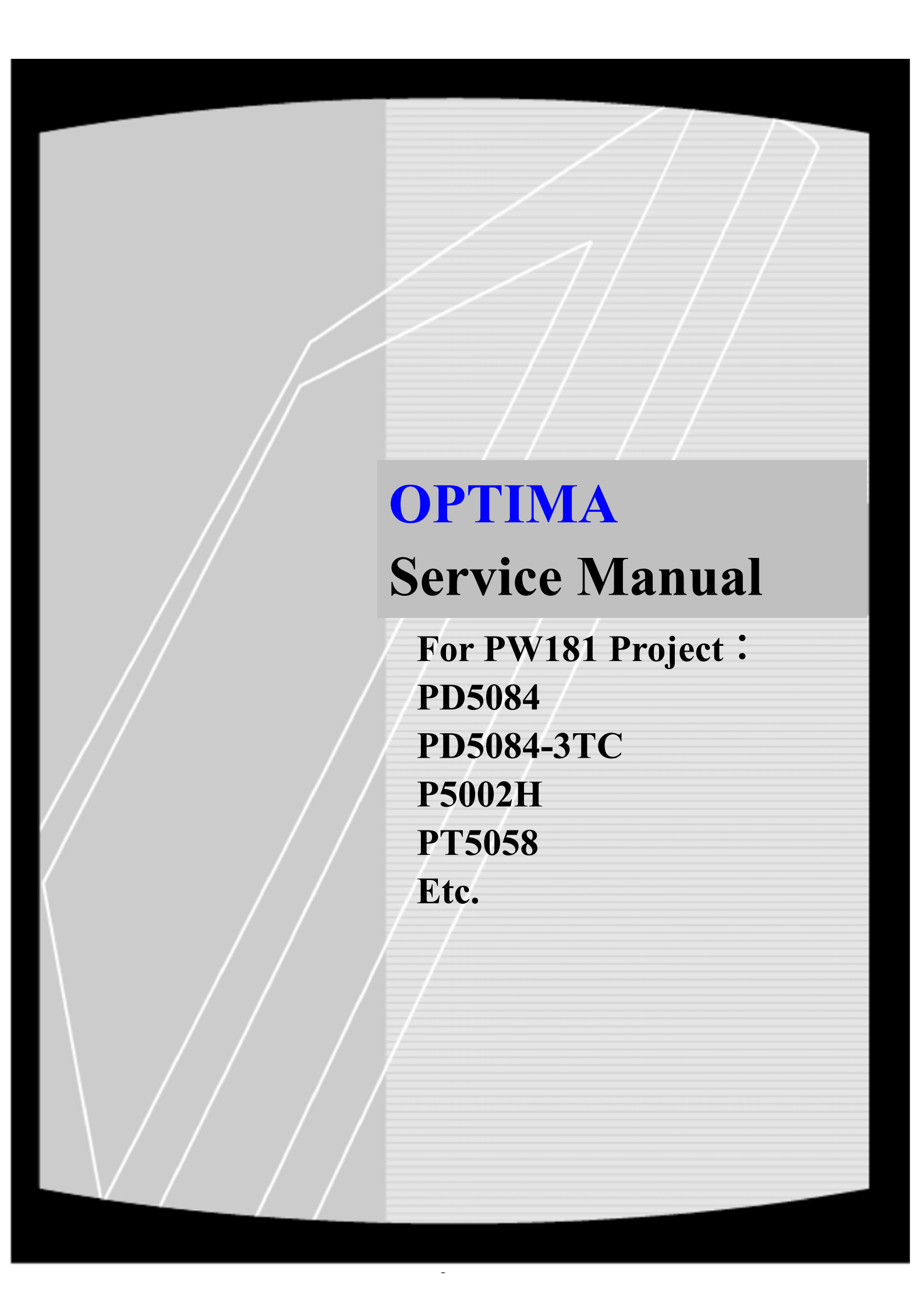




OPTIMA

Service Manual

For PW181 Project :

PD5084

PD5084-3TC

P5002H

PT5058

Etc.

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Date : 2005/05/18

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1、 SPECIFICATION

1-1 General Specification

Item		specification		
Panel Spec	Screen size	50 inch plasma display panel		
	Aspect	16:9		
	Display pixels	1366 x 768 (WXGA)		
	Effective display size	1106mm x 622mm		
	Number of color	1670 million colors		
	Contrast Ration	3000:1 (in dark room)		
	Peak brightness	1000 cd/m ²		
Video Mode	AV1	RCA x 1	PAL, NTSC, SECAM	Audio: L/R x 1
		S-Video1 x 1	PAL, NTSC, SECAM	Audio: L/R x 1
	AV2	RCA x 1	PAL, NTSC, SECAM	Audio: L/R x 1
		S-Video2 x 1	PAL, NTSC, SECAM	Audio: L/R x 1
	COMPONENT (YCbCr)	Y,Cb,Cr x 1	PAL, NTSC, SECAM	Audio: L/R x 1
	HDTV	Y,Pb,Pr x 1 D-Sub x 1 DVI x 1	1920X1080i(60Hz 50Hz)	Audio: L/R x 1
			1920X1080P(30Hz)	
			480P(60Hz)	
			720P(60Hz)	
PC Mode	Signal input	Analog：D-Sub 15 pin		
	Plug and play	DDC / 2B		
	Support Frequency	FH:30KHz to 69KHz ， FV:56Hz to 85Hz		
	D-Sub Mode	VESA: 640 x 480 (60Hz/72Hz/75Hz/85Hz) VESA: 800 x 600 (60Hz/72Hz/75Hz/85Hz) VESA: 1024 x 768 (60Hz/72Hz/75Hz) VESA: 1280 x 1024 (60Hz)		
	D-Sub Audio	Earphone (3.5ø)		
DVI Mode	Signal input	Digital：DVI-D 24 pin		
	Plug and play	DDC / 2B		
	Support Frequency	FH:30KHz to 80KHz ， FV:56Hz to 85Hz		
	DVIMode	VESA: 640 x 480 (60Hz/72Hz/75Hz/85Hz) VESA: 800 x 600 (60Hz/72Hz/75Hz/85Hz) VESA: 1024 x 768 (60Hz/72Hz/75Hz/85Hz) VESA: 1280 x 1024 (60Hz)		
	DVI Audio	Earphone (3.5ø)		
AV Out	AV Output	RCA × 1		
Audio Out	Speaker Amplifier	External:10W × 2		
	Audio Output	RCA (L / R)		
Power	Power input sources	100-120V/200-240V~ ,60/50Hz		
	Power consumption	470W (Typical)		
Environment	Operation Temperature	+ 0 °C ~ + 40 °C		
	Storage Temperature	- 10 °C ~ + 50 °C		
	Humidity	10% -- 85%		
Dimension	Width x Height x Thickness	1227 x 825 x 85 (mm)		
Net weight	No Accessory	49.5 Kg		
Accessory	Remote Control Transmitter, Battery (AAA X 2), Power Cord, RCA Cable , D-SUB Cable, DVI-D Cable, User’s Manual,S-Video Cable, Audio Cable, RF Cable			
Choose Part	Wall Mounting Bracket			

1-2 PDP TV Description

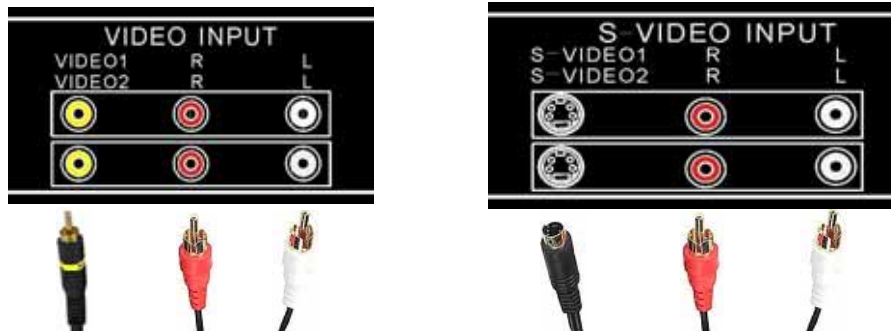
- 50 inch (127cm) Large Screen Flat Panel Plasma Display
- Panel Resolution: WXGA (1366 x 768 Pixels)
- MAX Brightness of Panel: 1000 cd/m²
- MAX Contrast Ratio of Panel: 3000:1
- View Angle: Greater than 160°
- Dual Video, Dual S-Video, Single Y/Cb/Cr (480i, 576i)
- Single Y/Pb/Pr (480P, 576P, 720P, 1080i, 1080P) HDTV Ready
- Single Video, Audio (L/R) Output
- PC D-SUB 15Pin Signal Receiver
- DVI-D Signal (TMDS) Receiver, Support HDTV, SDTV
- External 10W×2 Speaker
- Intelligent Volume Control Function
- PIP (Picture in Picture)
- POP (Picture Out Picture, Split Plane)
- High Effective 8 bits Digital Video Decoder
- Digital 4H Comb Filter
- 3:2, 2:2 Pull Down
- DLTI / DCTI Digital Brightness/ Chroma Adjust
- Digital I / P Processor, Progressive Display
- HDSPT (High Definition Scaler Processor Technology)
- Timer to Turn ON / OFF display
- MTS, Stereo, Mono Sound, Surround Function

1-3 Interface and connection

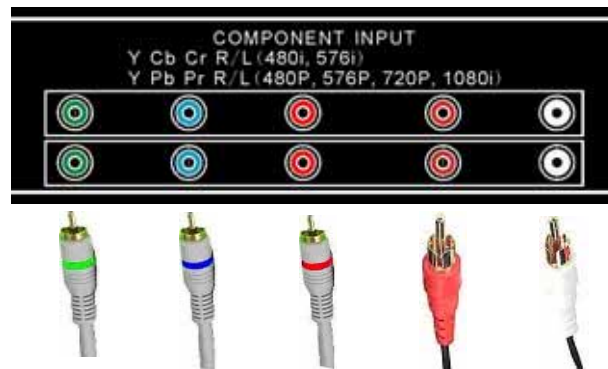
Please connect this display to other equipment as picture below.

You may have many types of equipment as: DVD, VCD, VCR, Set Top Box, X-Box and so on.

1-3-1 Input connection of Video and Audio signal(DVD/VCD/VCR)



We have 2 AV input jacks for VIDEO/AUDIO and S-VIDEO/AUDIO. The R / L is Audio input for every VIDEO and S-VIDEO.

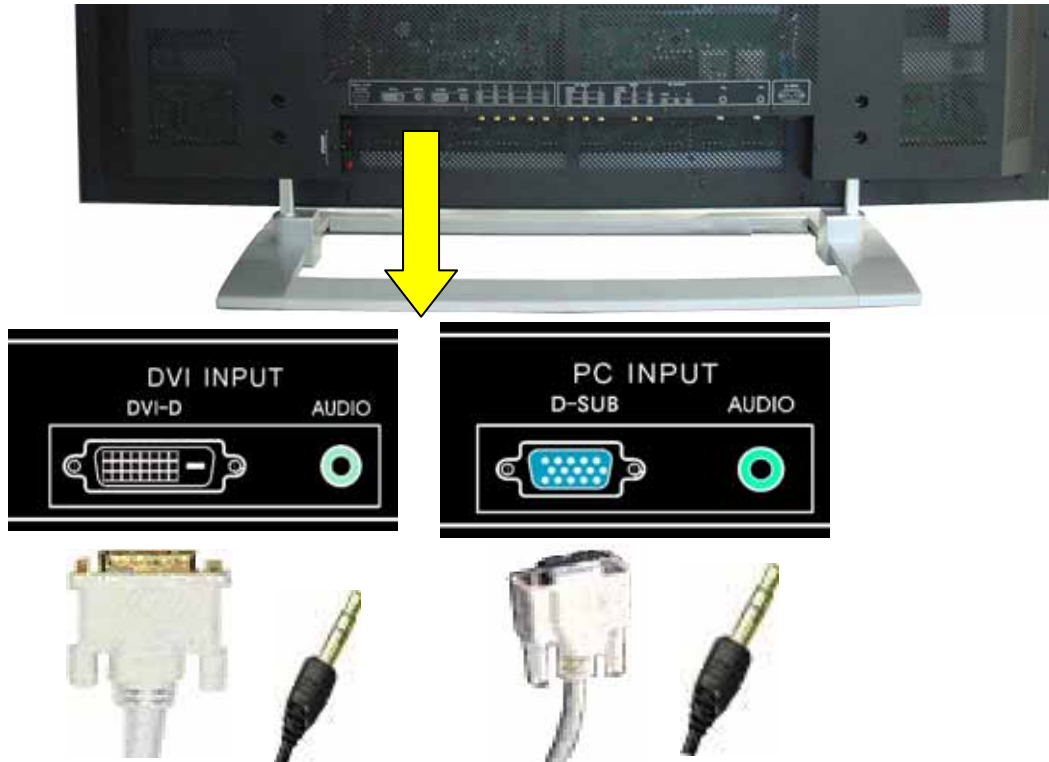


We have 2 components signal input jack: YCbCr and YPbPr. The R / L is Audio input for every YCbCr and YPbPr.

If your DVD or Set Top Box have YCbCr or YPbPr output, you can connect it to YCbCr or YPbPr input jack. And select to YCbCr or YPbPr source input. (Some DVD or Set Top Box need to set to YCbCr or YPbPr output)

Notice: If you see that display abnormality in screen, you need to check the cable connection and DVD setup.

1-3-2 Input connection of PC signal



- ▲ Notice: The PC output can not set out of range
The highest Resolution input is 1280 X 1024 / 60Hz
Some PC models cannot be connected to the set

- **D-SUB 15 Pin:**

Connect D-SUB signal cable (VGA cable) from PC to D-SUB jack at the back of this display. And connect earphone cable from PC earphone output jack to AUDIO input jack near to the D-SUB jack.

Setup:

Use the key “GRAPHIC” in Remote Control Transmitter or “MODE” key on Front panel controls select source to “D-SUB” state. Then turn on the PC.

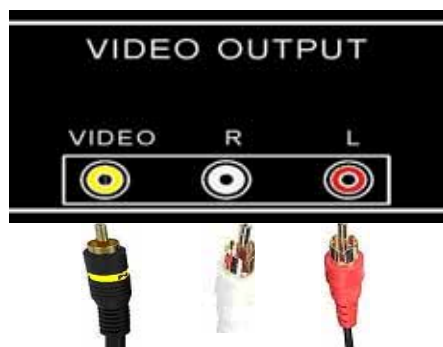
- **DVI-D:**

Connect DVI-D 24 Pin signal cable (TMDS cable) from equipment to DVI-D jack at the back of this display. And connect earphone cable from equipment earphone output jack to AUDIO input jack near to the DVI-D jack.

Setup:

Use the key “GRAPHIC” in Remote Control Transmitter or “MODE” key on Front panel controls select source to “DVI” state. Then turn on the equipment.

1-3-3 Output connection of Video and Audio signal

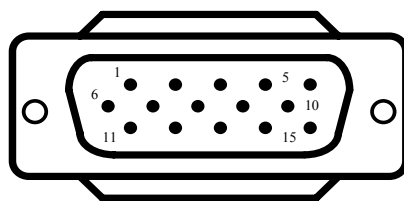


The VIDEO OUTPUT part is analog Video (CVBS) and Audio output. L & R is Audio left and right channel.

They can connect to other analog Video (CVBS) input and Audio input device. See the picture as top.

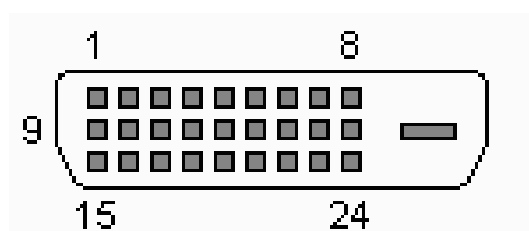
2、Interface PIN Description

2-1 D-SUB Pin Description(15 PIN)



Pin	Description	Pin	Description
1	Red Video	9	No Pin!
2	Green Video	10	Sync Ground
3	Blue Video	11	Not Used
4	Not Used	12	Serial Data for DDC
5	Ground	13	H-Sync.
6	Red Ground	14	V-Sync.
7	Green Ground	15	Serial Clock for DDC
8	Blue Ground		

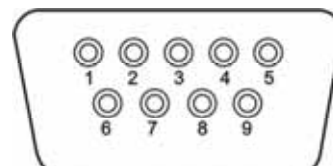
2-2 DVI Pin Description



Pin	Description	Pin	Description
1	T.M.D.S Data 2 -	14	+5V Power
2	T.M.D.S Data 2 +	15	Ground
3	T.M.D.S Data 2 Shield	16	Hot Plug Detect
4~5	No Connection	17	T.M.D.S Data 0 -
6	DDC Clock	18	T.M.D.S Data 0 +
7	DDC Data	19	T.M.D.S Data 0 Shield
8	No Connection	20~21	No Connection
9	T.M.D.S Data 1 -	22	T.M.D.S Clock Shield
10	T.M.D.S Data 1 +	23	T.M.D.S Clock +
11	T.M.D.S Data 1 Shield	24	T.M.D.S Clock -
12~13	No Connection	25~29	No Connection

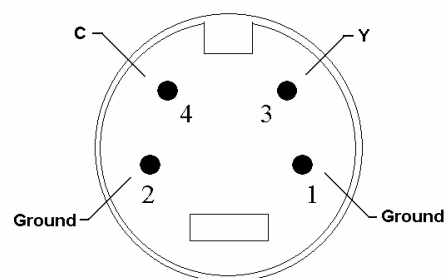
2-3 RS-232 Pin Description

Pin	Description
1	No Connection
2	RXD (Receive data)
3	TXD (Transmit data)
4	DTR (DTE side ready)
5	GND
6	DSR (DCE side ready)
7	RTS (Ready to send)
8	CTS (Clear to send)
9	No Connection



2-4 S-VIDEO Pin Description (Y/C separation)

Pin	Description
1	GROUND
2	GROUND
3	Y
4	C



2-5 Composite Pin Description

RCA female

2-6 Components Pin Description (YPbPr/YCbCr)

RCA female * 3

2-7 Audio Pin Description

RCA female *6 (Red/White : Right/left channel)

3、Operation

3-1 Operation of Remote Control Transmitter

“POWER”

The display turn on /turn off key

“VIDEO”

S-Video2、AV2、YCbCr、S-Video1、AV1 source select key

“GRAPHIC ”

D-SUB、DVI、Y, Pb, Pr (HDTV) source input

“WIDE”

Fill all, Normal, Wide, Zoom display select

“PIP”

Picture in Picture On or Off key

“SLEEP”

Select timer into Power down state.

off→30→60→90→120→off

“P.MODE ”

Picture mode select: normal,User, Movie,bright

“FREEZE”

Press to freeze the picture, press again to return

“MUTE”Mute the sound

“VOL-/ VOL+ ”

Press VOL -/ VOL +key adjust volume

“AUTO”

Adjust the picture automatically, make it reach the best result. The function is only for D-SUB input

“ADJ-/ ADJ +/▲/▼”

Adjust the data in Menu

“MENU ”

Enter or exit MENU.
Exit other operation

“SWAP”

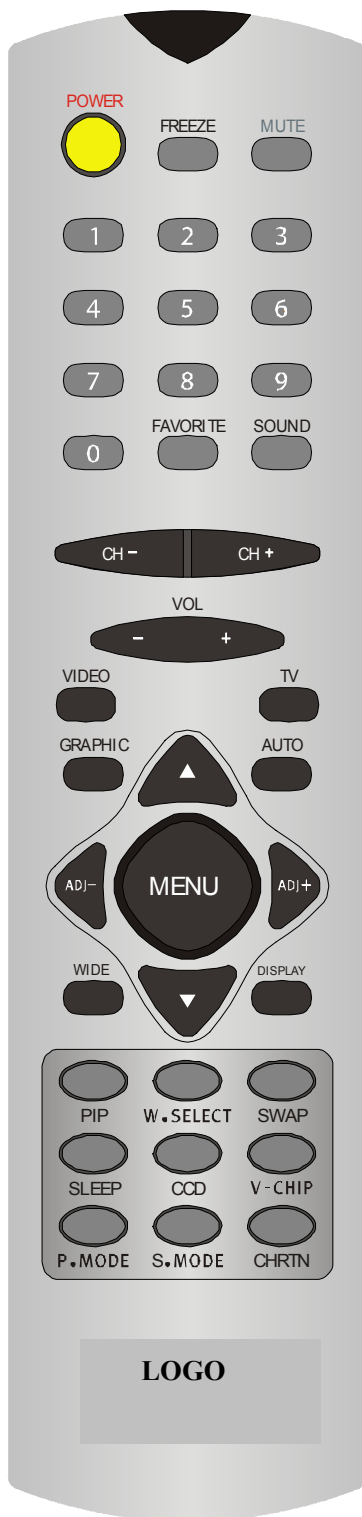
PIP and POP state change two picture

“W. SELECT”

Select Main picture PIP

“S.MODE”

Sound mode select: cinema, music, news, User

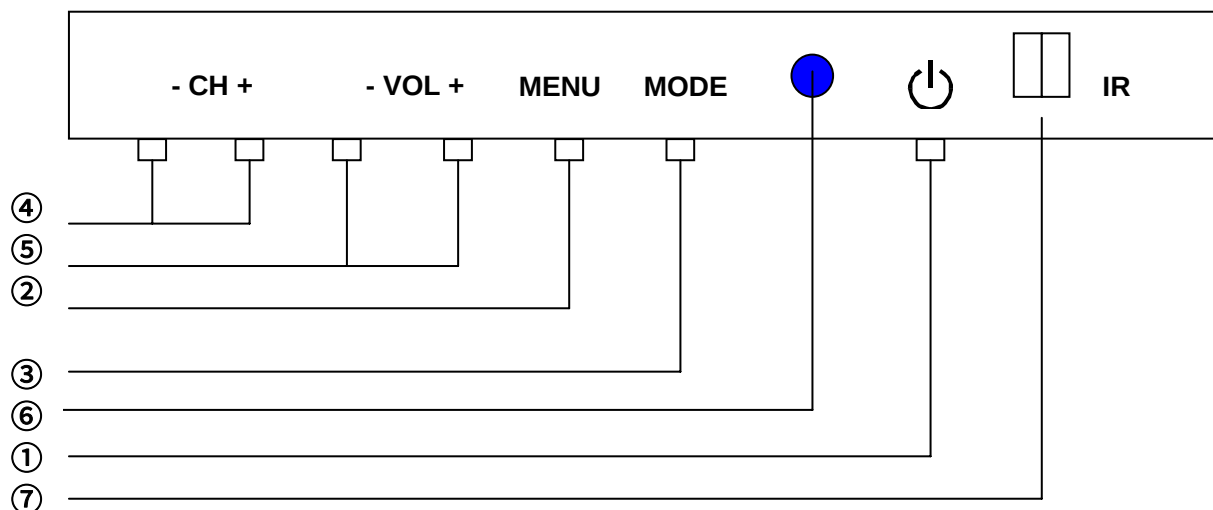


Other Key (not available for Australia) :

CCD/V-CHIP :Only for US NTSC TV system.

Other Teletext function key: DISPLAY, 0~9 number, FAVORITE, TV, SOUND, CHRTN,CH-,CH+

3-2 Front panel controls



① IR: Remote Control aim at this part. (infrared ray Receiver)

②  : Power Key. Press the key into standby or Turn on state.

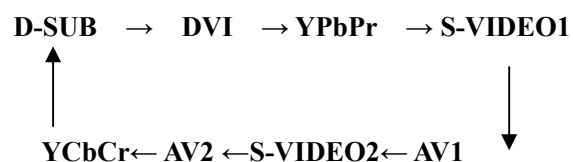
③ Power Indicator:

Power Indicator: Green (Turn On)

Power Indicator: Red (Stand by)

④ MODE: Signal Source selection.

Press repeatedly to select from the available Signal Input:



⑤ MENU: Displays the On Screen Display and setup the display.

- Press this key into Main Menu, press - CH + key select item. Press Volume Up (+) key “ VOL + ”into submenu.
- Press MENU key return to main menu or exit menu.

⑥ - VOL +: Volume Down (-) / Up (+)

- Press - VOL + key can enter menu or adjust some function.

⑦ - CH +: Programme Number Down (-) / Up (+)

- Press - CH + key can down or up menu item.

3-3 MENU Function

MENU Function

1. Press “MENU” key on Remote Control Transmitter or Front panel controls
2. Press “▲/▼” Move the cursor up and down select sub menu item
3. Press “ADJ +” enter sub menu item, and adjust in the item.

3-3-1 Main MENU

Press "MENU" key to enter the main menu, as shown below.



PICTURE: Picture Menu

SETUP: Setup Menu

LAYOUT: Layout Menu

SOUND: Sound Menu

DISPLAY: Display Menu

TIMER: Timer Menu

Press “ADJ +”, enter sub Menu

3-3-2 Picture MENU

Picture adjustment menu, as shown below.



COLOUR TEMP.: Color temperature select, standard→ Warm →Cool

Press “ADJ+” enter sub menu item, and press “ADJ-/ ADJ+” adjust in the item

Sound adjustment menu, as shown below.

3-3-4 Setup MENU

Sound adjustment menu, as shown below.



BASS: Adjusts lower deeper sounds 0 ~ 100 Adjust

TREBLE: Adjusts higher sharper sounds 0 ~ 100 Adjust

BALANCE: Adjusts the sound level difference between left and right speakers
0 ~ 50 / 50~100 Adjust

SURROUND: Surround On / Off

INTER SPEAKER: On ** Internal Speaker On

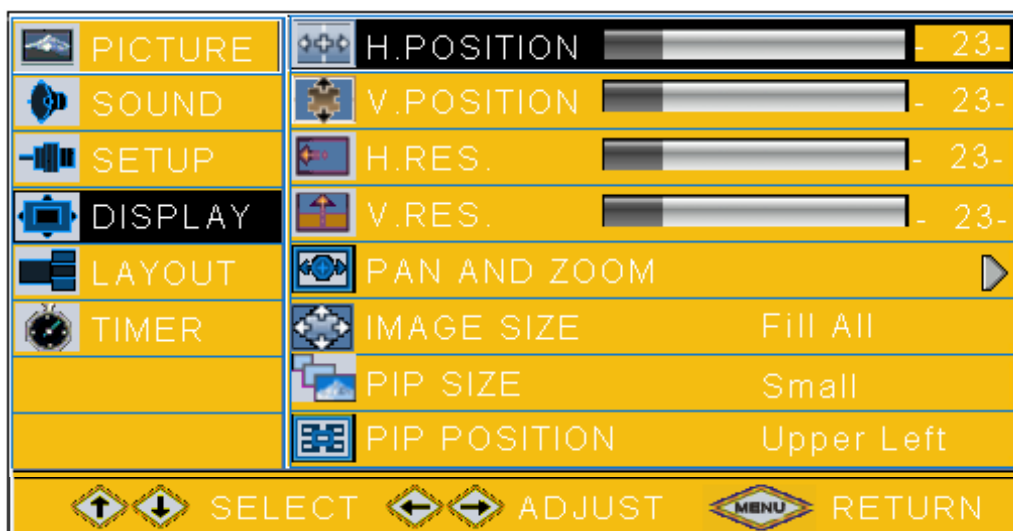
Off ** Use only with External Speakers

Press “▲ / ▼” move the cursor up and down select sub item

Press “ADJ+” enter sub menu item, and press “ADJ-/ ADJ+” adjust in the item

3-3-5 Display MENU

To Display menu



H. POSITION: Display picture horizontal location adjust

V. POSITION: Display picture vertical location adjust

H.RES: Horizontal resolution adjustment

V.RES: Vertical resolution adjustment

(Optima recommend default setting are not changed)

(H.RES And V.RES function is available on D-SUB input only,

It is normal that display will display black screen during adjustment.)

PAN AND ZOOM: Press “ADJ+” enter zoom menu

Press “▲/▼” adjust scale of zoom

When scale larger than 1,press“DISPLAY/INFOR”

key enter pan function. Press “▲/▼”and “ADJ-/ ADJ+”key up / down and left / right the picture centre to watch.

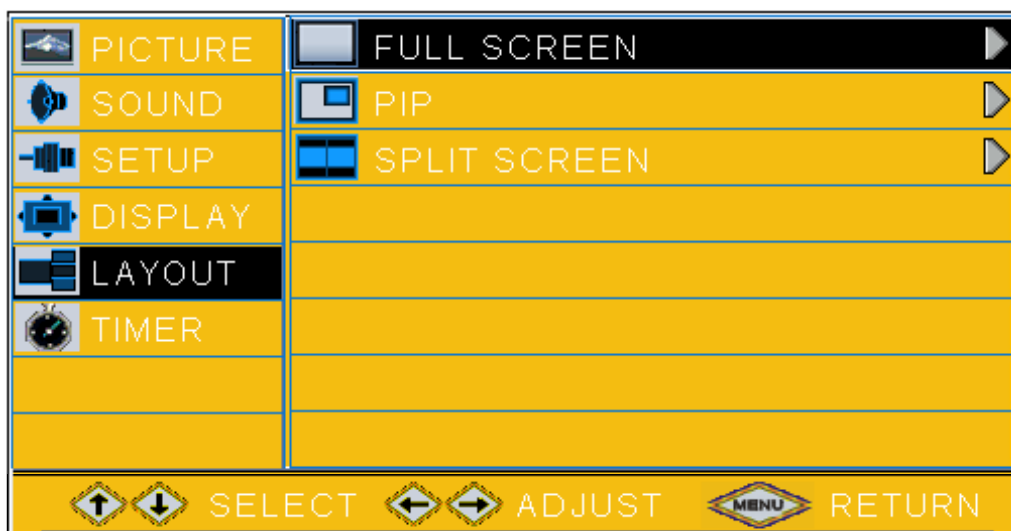
IMAGE SIZE: Press “ADJ+” enter. Fill all → Normal → Wide → Zoom → Fill all

PIP SIZE: adjust Picture In Picture the sub picture size

PIP POSITION: adjust Picture In Picture the sub picture location

3-3-6 Layout MENU(Multiwindows)

To layout menu



FULL SCREEN: Single Picture mode, press “ ADJ+”key enter.

PIP: Picture In Picture mode, press “ ADJ+” key enter.

SPLIT SCREEN: Two windows display mode, press “ADJ+” key enter.

- PIP: Picture In Picture mode

After enter it, the main picture is D-SUB, sub picture is AV1,sound is from D-SUB.

User can press “W. SELECT”key select which is main picture.And the sound is follow to the main picture.

Press “VIDEO” key can select main picture source: S-VIDEO2 , AV1, AV2 etc.

Press“SWAP” key can exchange two picture.

All these keys are in Remote Control Transmitter, see page



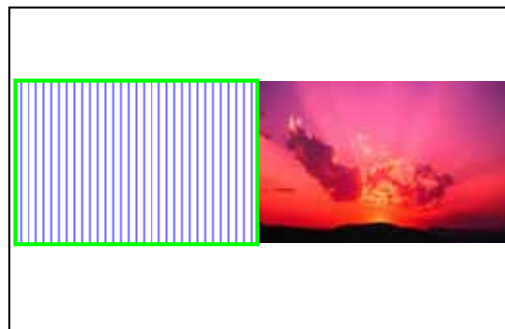
- SPLIT SCREEN: Two windows display mode

After enter it, the main picture is D-SUB, sub picture is AV1,sound is from D-SUB.

User can press “W. SELECT”key select which is main picture.And the sound is follow to the main picture.

Press “VIDEO” key can select main picture source: S-VIDEO2 , AV1, AV2 etc.

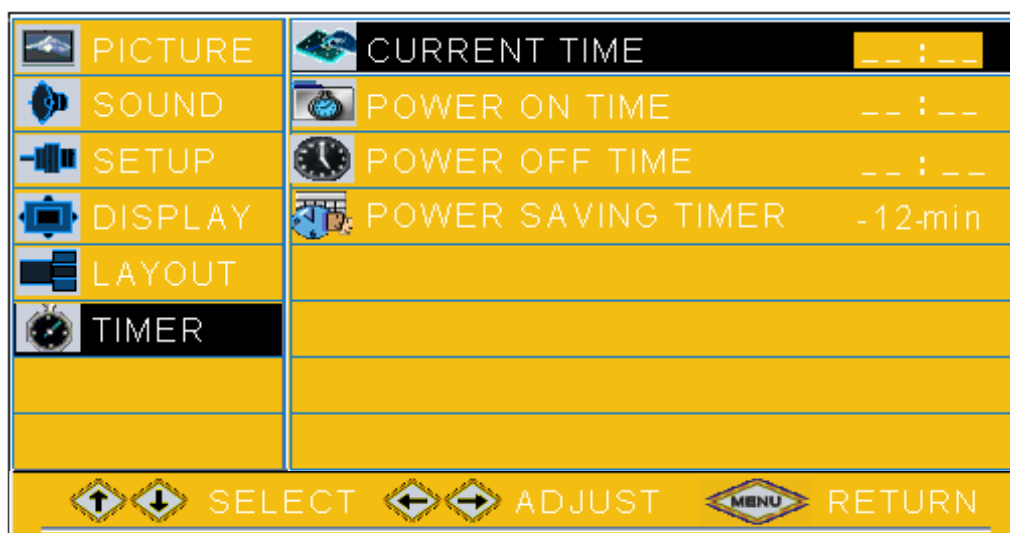
Press“SWAP” key can exchange two picture.



- ▲ Some source can't be selected, and some source display need wait for a moment.
- ▲ If user found some abnormal in picture, can turn off power of this TV Set.

3-3-7 Time MENU

To Timer menu



CURRENT TIME: Set current time.

POWER ON TIME: Set the power on time.

Need set current time and power off to standby state.

POWER OFF TIME: Set the power off time. Need to set current time.

POWER SAVING TIMER: If no signal input, the display will turn to standby state.



- How to set time:
Press “ADJ+” key enter time set sub menu. Press “ADJ- ” or “ADJ+” key set Hours : Minutes .
- All time set is same.

4、Trouble shooting chart

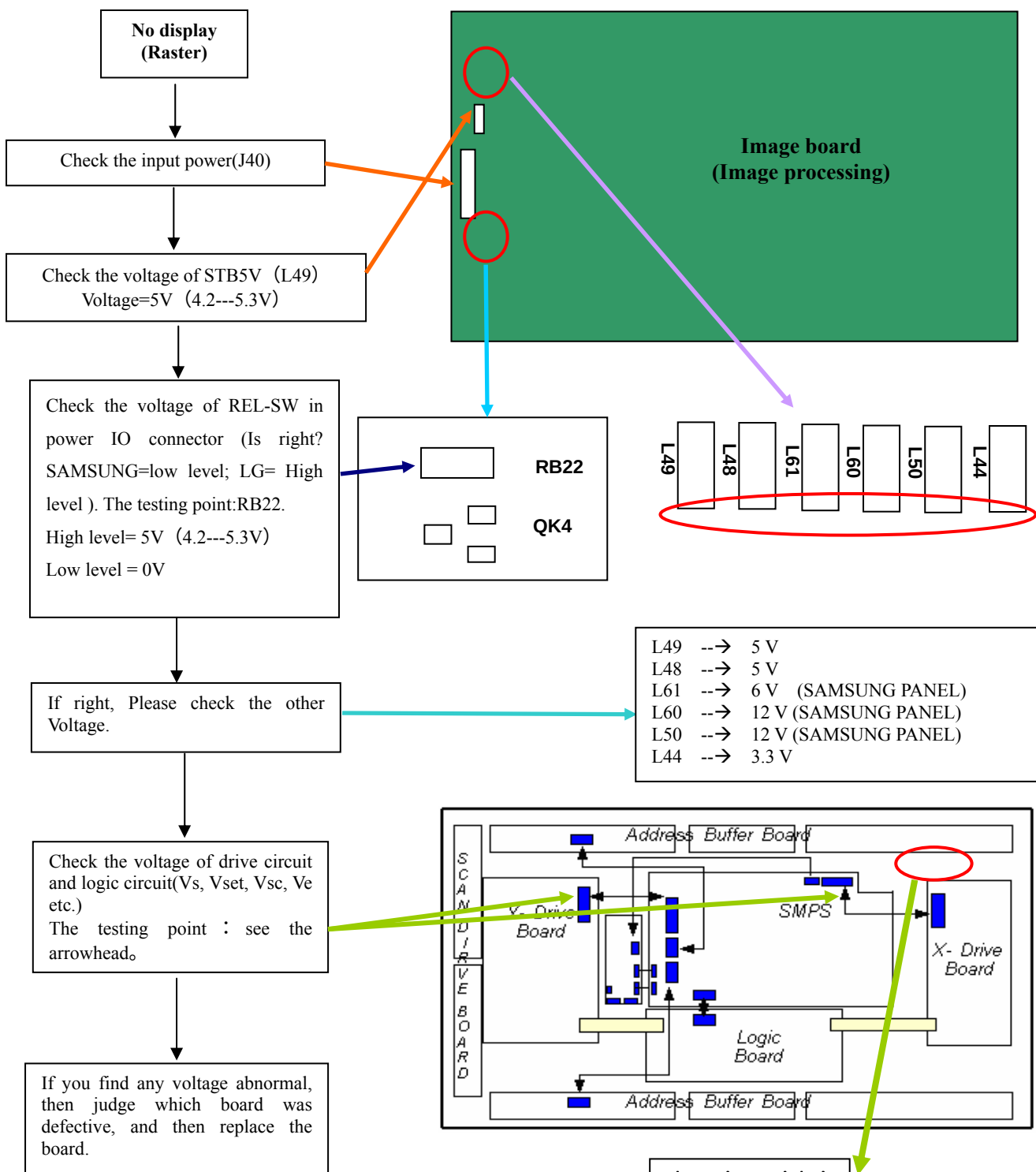
If replace “IMAGE BOARD”, Please re-do “DDC-content” program & “WHITE-BALANCE” & Flash Update.

4-1 PANEL Trouble shooting

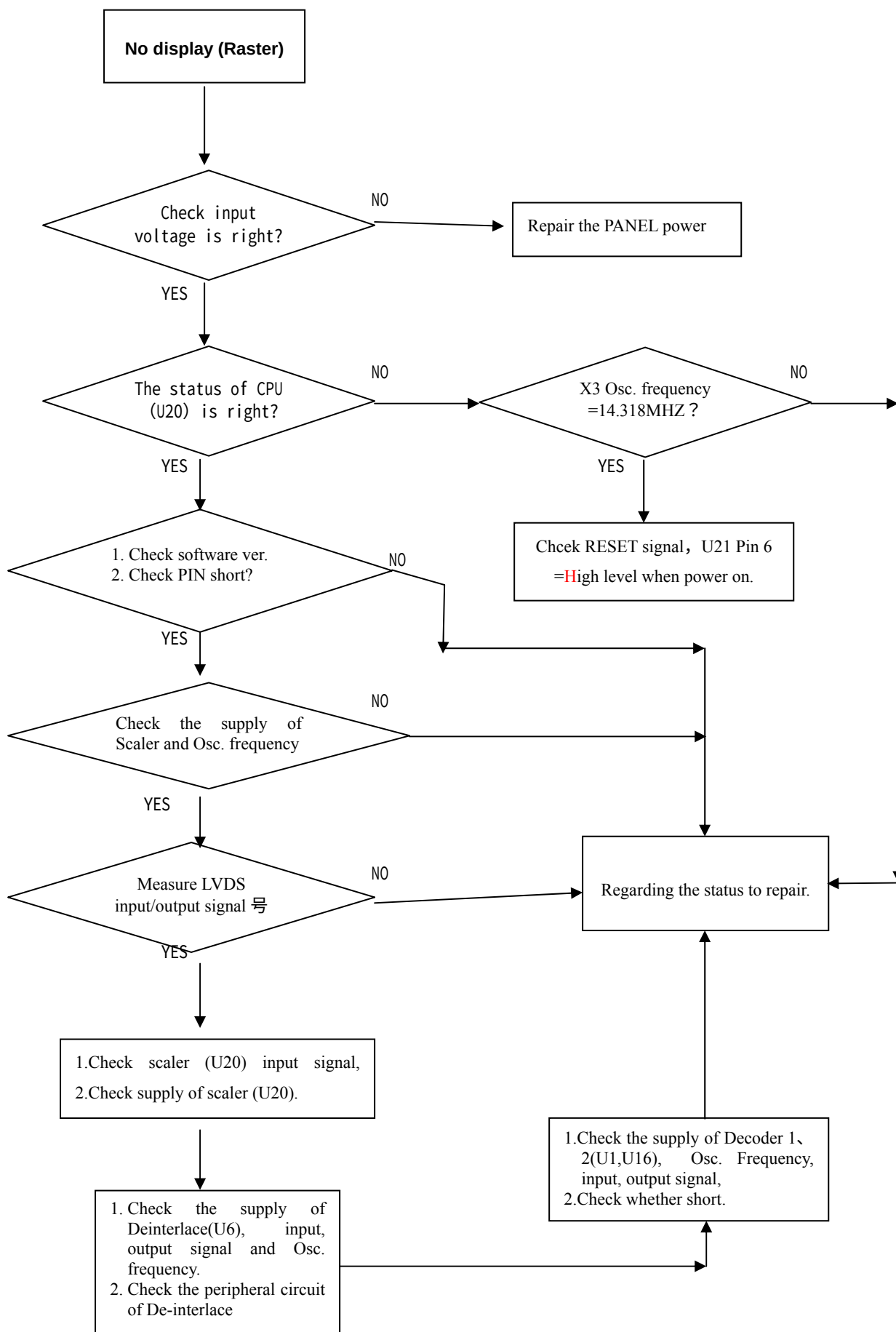
Please reference the “PANEL Service Manual”.

4-2 Image board trouble shooting

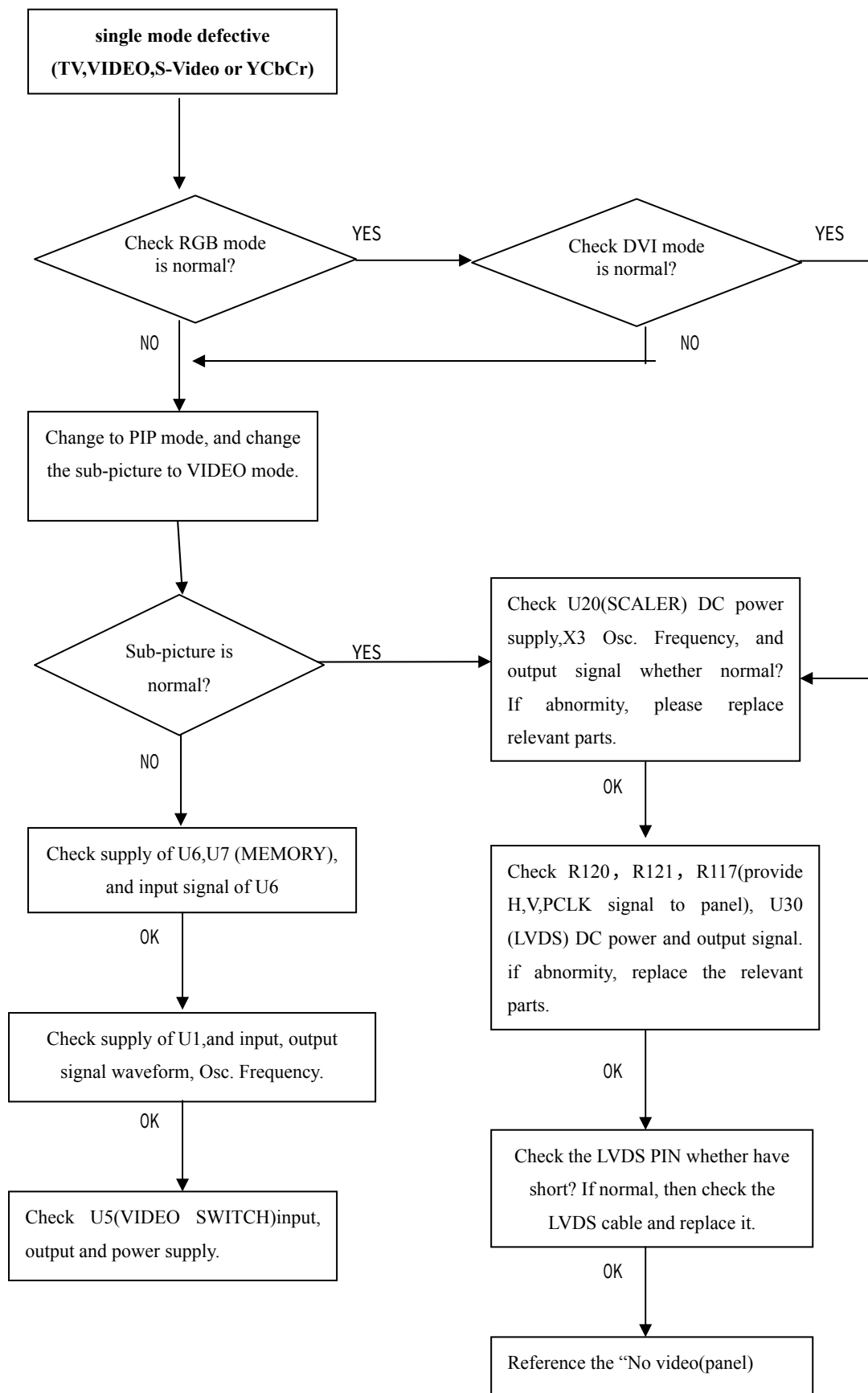
4-2-1 No display(PANEL)



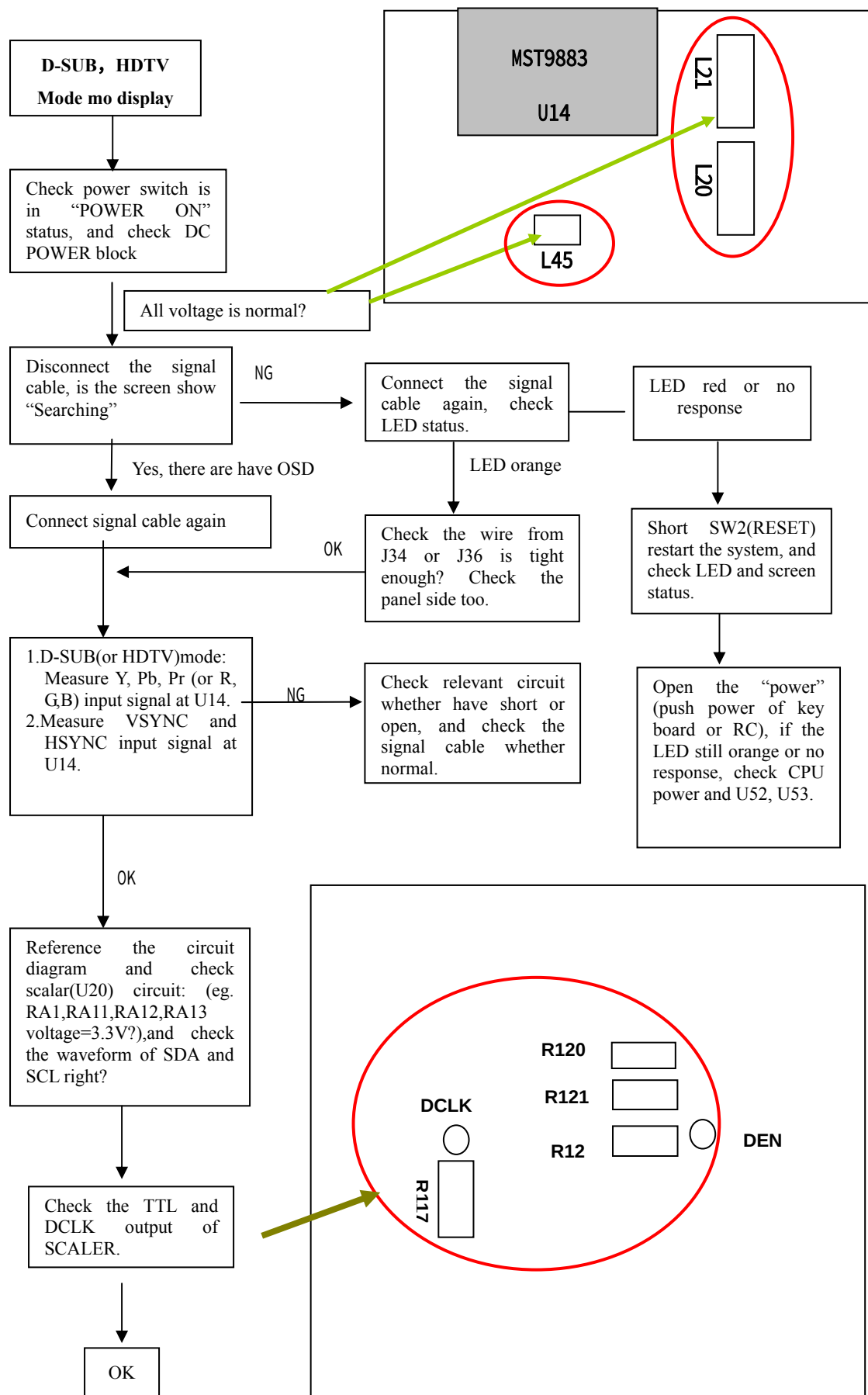
4-2-2 No display(Image board)



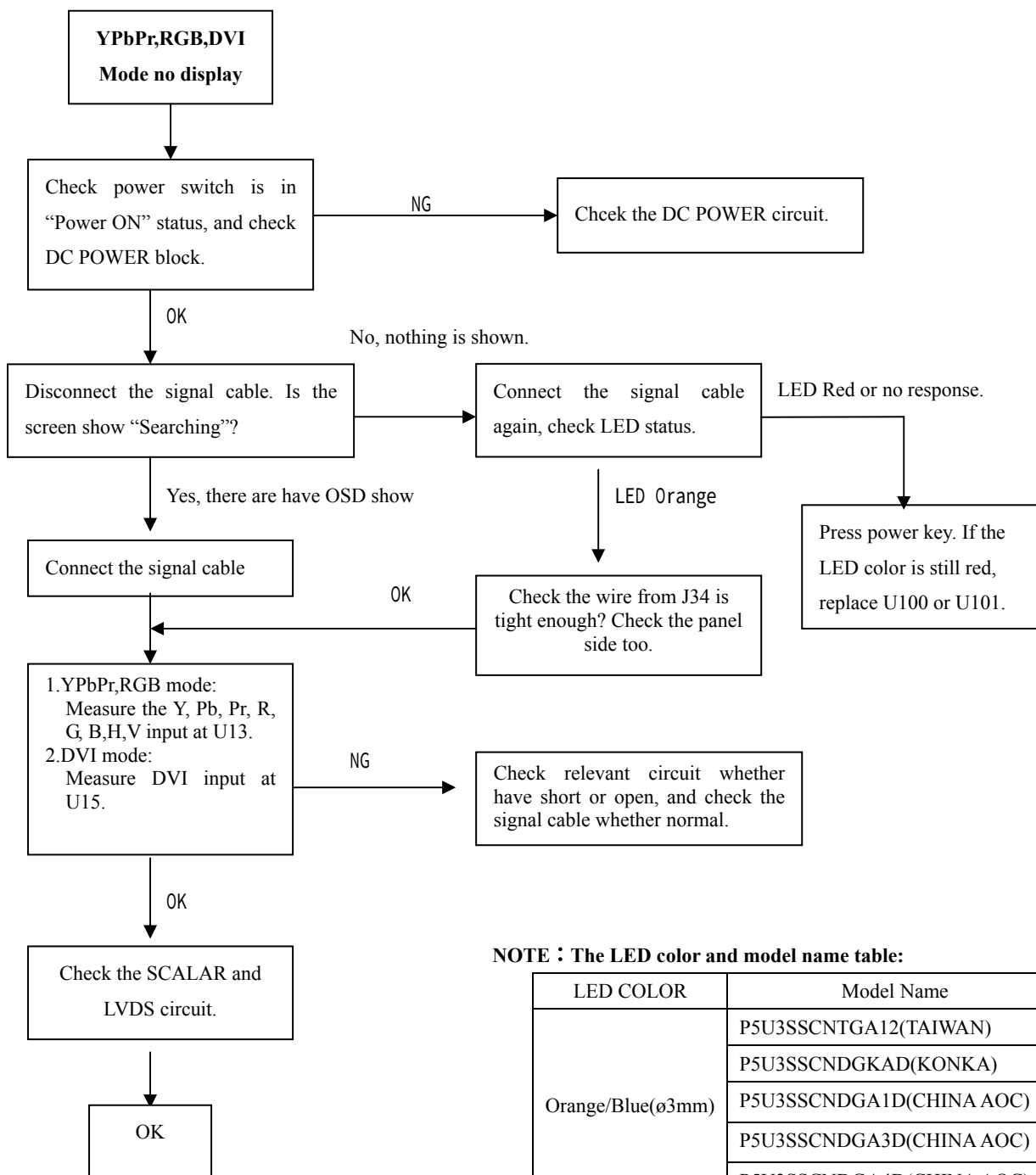
4-2-3 Dynamic single mode defective



4-2-4 RGB or DVI mode defective



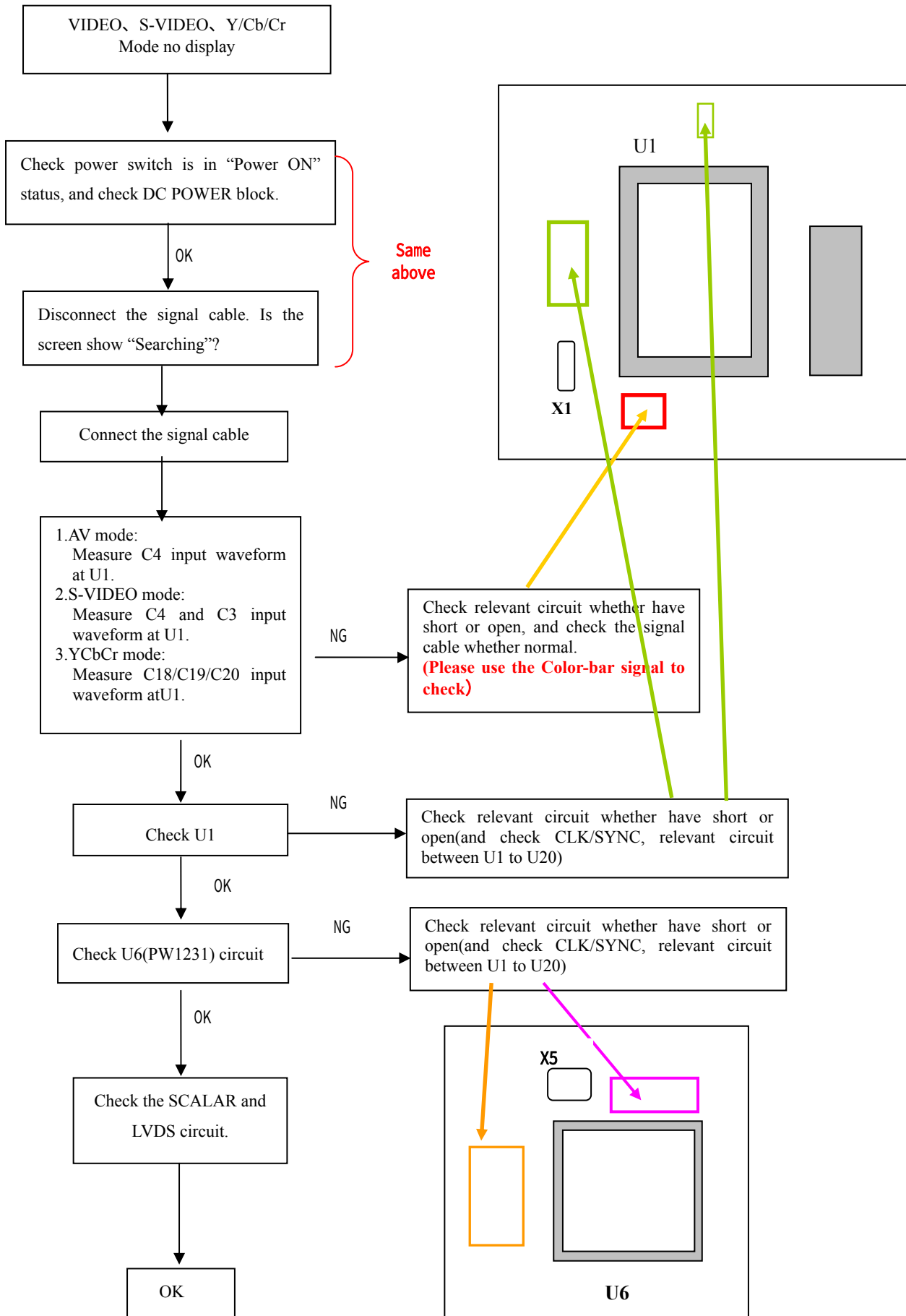
4-2-5 Graphic-Block



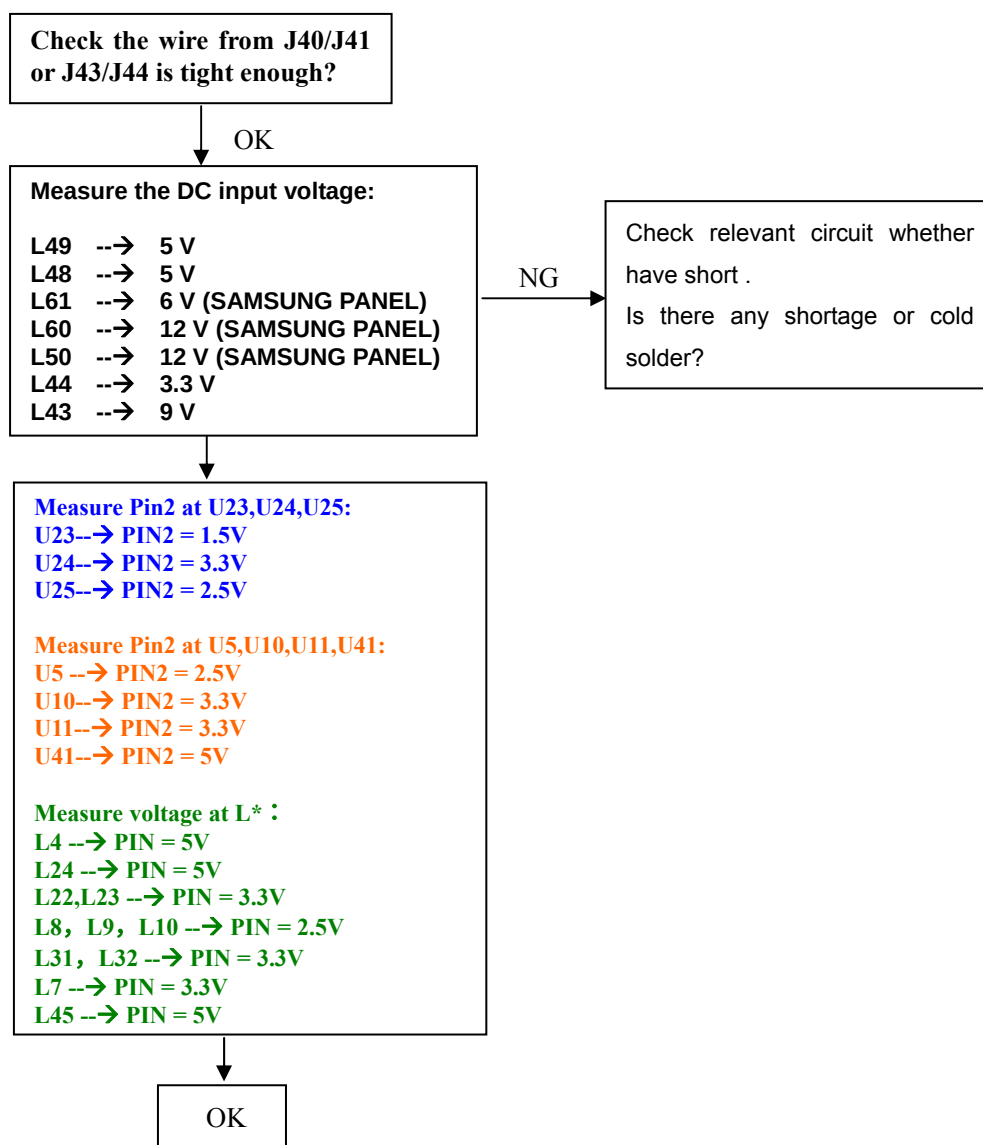
NOTE : The LED color and model name table:

LED COLOR	Model Name
Orange/Blue(ø3mm)	P5U3SSCNTGA12(TAIWAN)
	P5U3SSCNDGKAD(KONKA)
	P5U3SSCNDGA1D(CHINA AOC)
	P5U3SSCNDGA3D(CHINA AOC)
Red/Blue(ø5mm)	P5U3SSCNDGA4D(CHINA AOC)
	P4V6SGCNDBKAD(KONKA)
Red/Green(ø5mm)	P4X3TSCNLCACD(Australia)
	P5U3SSCNDGCHID(ChangHong)
	P5U3SSCNLGA1D(Australia)

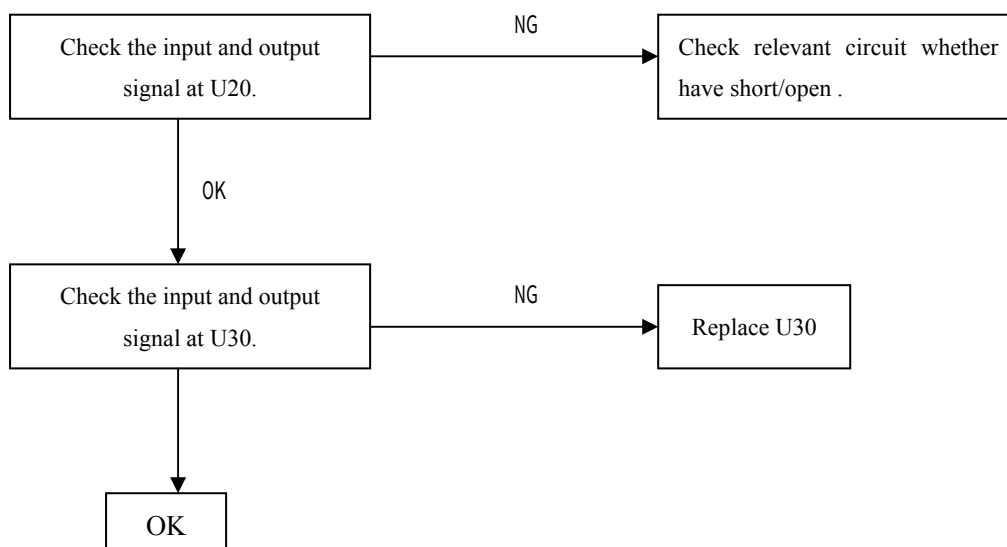
4-2-6 Video-Block



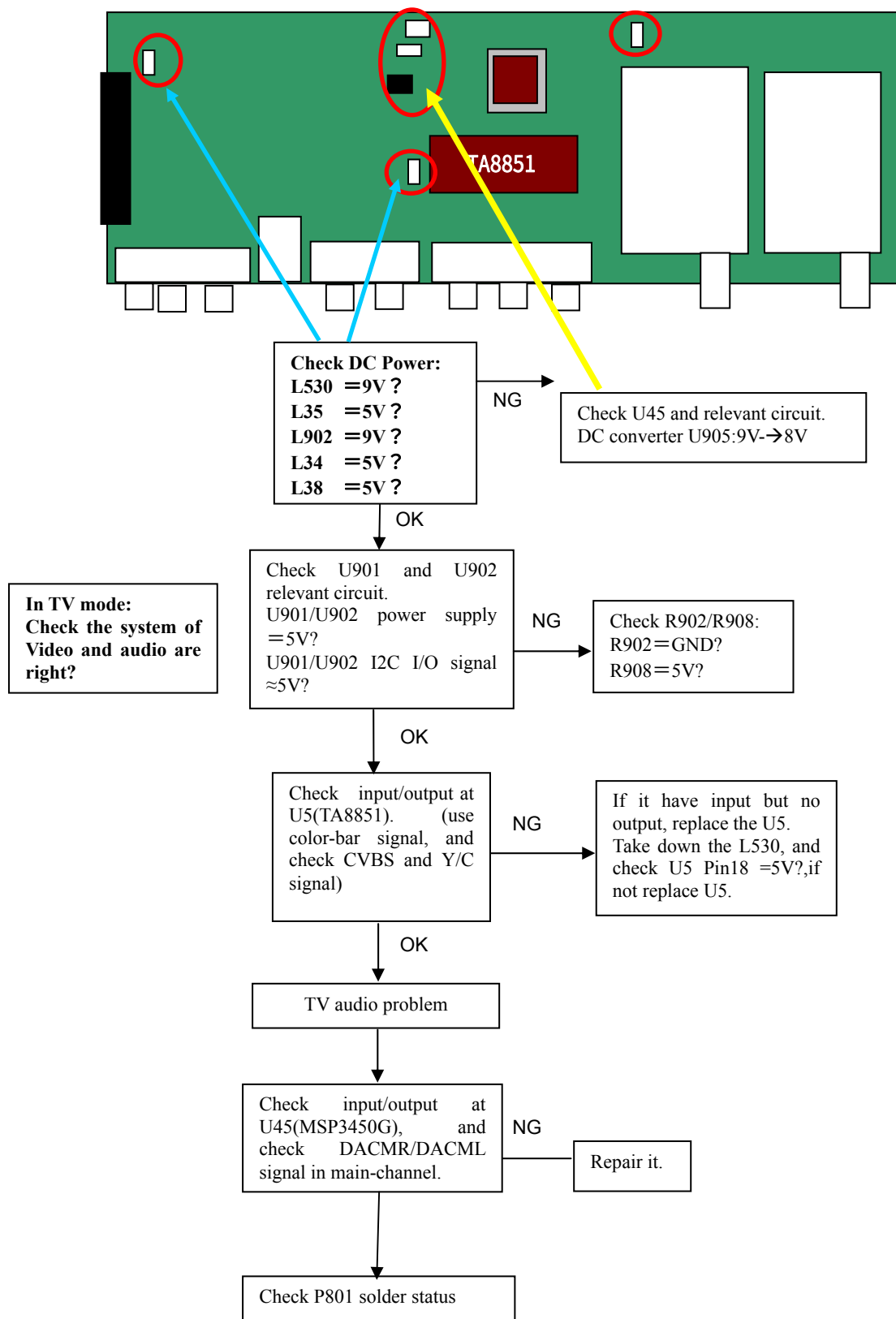
4-2-7 直流电源电路



4-2-8 Scaler and LVDS block

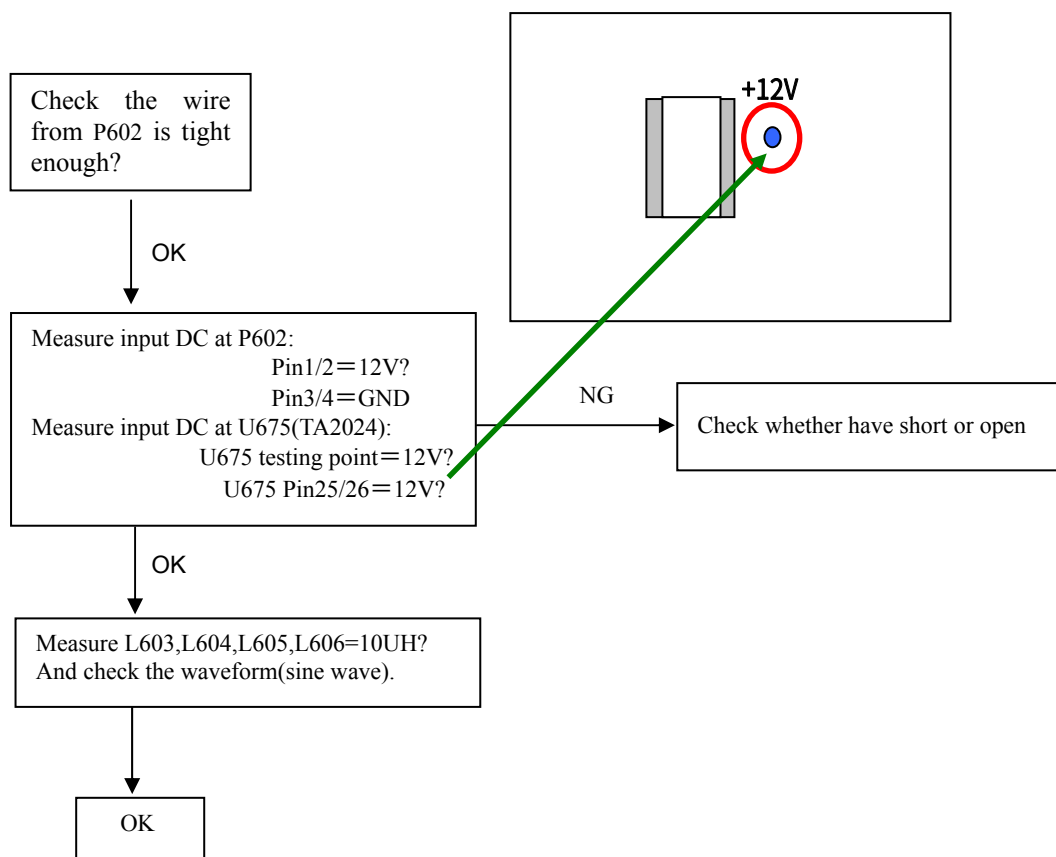


4-3 Tuner board trouble shooting

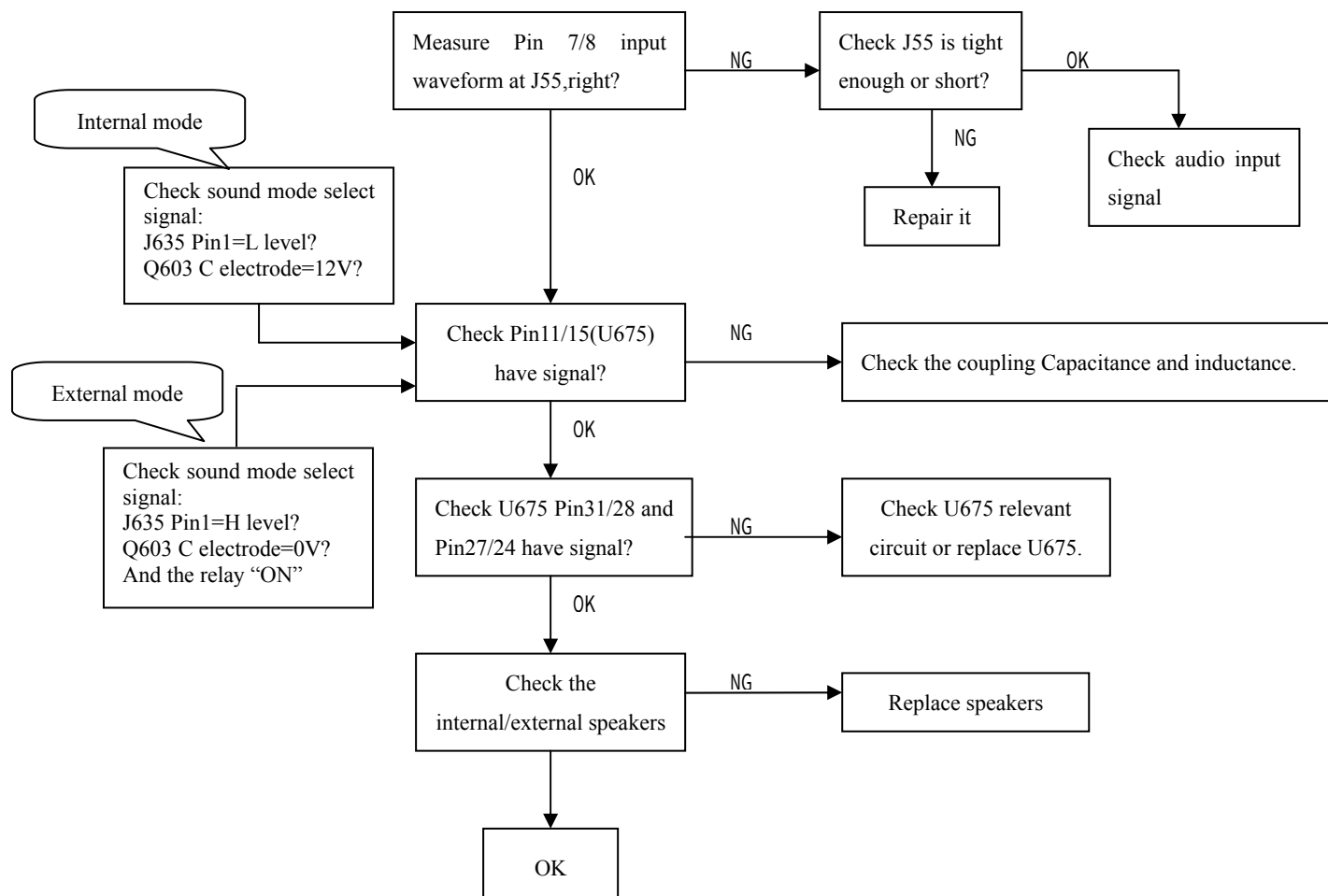


4-4 Audio board trouble shooting

4-4-1 DC power circuit



4-4-2 Audio circuit



5、 White-Balance Adjustment

5-1 Equipments list

Chroma7100	1set
VG828 video signal generator	1set
Chroma-2326	1set

5-2 Preparation and Adjustment process

1、 Preparation:

- Connect correctly the ports that one is HDTV of PDP and the other is VG-828.
- Connect correctly the ports that one is D-SUB of PDP and the other is VG-828.
- Connect correctly the ports that one is AV of PDP and the other is VG-828.
- Turn on the power both of the PDP and VG-828
- Cover the camera lens of Chroma-7100, then press the “0-CAL” button, when the display of chroma-7100 flicker, move the covering from the camera lens.

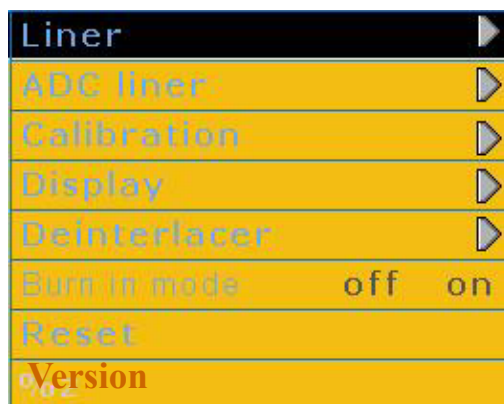
2、 Adjustment process

- **HDTV (YPBPR) adjustment**

Switch PDP input source to HDTV mode, to be sure temperature is set standard, brightness is set 50 and contrast is set 50, and we'll correct it if situation in fact don't meet the request.

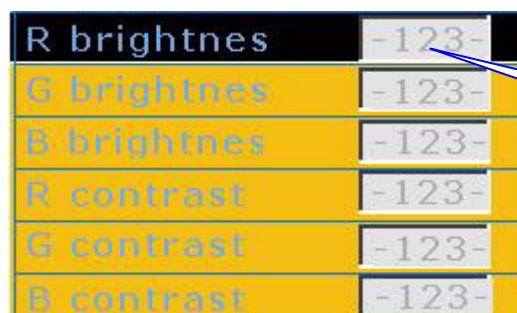
- 1). High brightness adjustment : VG-828 is set TIM954&PAT936 (the value of full white is 0.7255) , measure the temperature of the currently picture by Chroma7100,then compare the value measured and the standard value, if over the specification, then press the button MTS,9,5,1,and display on the Remote control ,and in the factory mode ,adjust the high brightness, so that make the value meet specification.

- ①. Enter into factory mode by the remote control, and the menu is shown as below:



Remark: Adjust of D-SUB, HDTV signal source : choose “ADC LINER” and adjust separately RGB ‘s BRIGHTNESS and CONTRAST.

- ②. Adjust the value of R Contrast、 B Contrast, so that meet the temperature specification.
- ③. The value of G Contrast keep fixed in adjustment period.



Note this data

- 2). Low brightness adjustment : VG-828 is set TIM20&PAT936 (the level of full white is equal to 0.7070) , measure the temperature of the currently picture by Chroma7100,then compare the measured value and the standard value, if over the specification, then press the button MTS,9,5,1,and display on the Remote control ,and in the factory mode ,adjust the high brightness, so that make the value meet specification.

The method of adjusting is as below:

Adjust the value of R Contrast,B Contrast, so that meet the temperature specification. The value of G Contrast keep fixed in adjustment period.

- 3). After adjustment low brightness, then set VG-828 as TIM954/PAT936 (the value of full white is 0.7 255) ,measure the high brightness temperature by Chroma7100 and adjust in the factory mode if out specification. The adjust method is as step 1.
- 4). Set VG-828 as TIM20/PAT936 (he value of full white is 0.7 70) , measure the low brightness temperature by Chroma7100 and adjust in the factory mode if out specification. The adjust method is as step 2.

Remark: Because the high level brightness adjustment and low level brightness adjustment will infect each other , so that need adjust again and again until both the high brightness and low brightness's color temperature meet specification.

● **D-SUB (RGB) Adjustment:**

- 1). Switch PDP input source to **D-SUB (RGB)** mode, to be sure temperature is set standard, brightness is set 50 and contrast is set 50.
- 2). Set Chroma2326 as TIM4/PAT105 mode, adjust high brightness (the value of full white is 0.7255) .
- 3). Set Chroma2326 as TIM183/PAT105, adjust low brightness (the value of full white is 0.7 70) ; and the adjust method is ad HDTV's.

● **AV mode Adjustment**

- 1). Switch PDP input source to **AV1** mode, to be sure temperature is standard, brightness is 60 and contrast is 65, and correct it if the currently situation is not meet it.
- 2). Set VG-828asTIM946/PAT936 mode, then adjust high brightness temperature (full white level is set 0.7255) .
- 3). Set VG-828 as TIM21/PAT936 mode, then adjust low brightness temperature (full white level is set 0.7 100) ; and the adjust method is ad HDTV's.After above mode adjustment, then press the MENU button and quit from the factory mode.

Remark : (1). Adjust AV mode: choose “LINER” and adjust the value of BRIGHTNESS,CONTRAST.

(2).Only need to record the value of R,G,B after finished adjustment, and not need to record the value if not adjust the value of RGB when the temperature meet specification.

5-3. Color temperature specification:

White balance adjust specification : $x=275\pm15$, $y=283\pm15$ (color temperature: standard)

Notice: In order to avoid modifying color temperature value, not to enter into the factory mode after having finished the color temperature adjustment.

6、DDC program and test

6-1 Equipments list and prepare

DDC tester	1PCS
PC	1set
D-SUB cable	1PCS
DVI cable	1PCS
Barcode reader	1set

Prepare before test:

1. Turn on the power of your PC and programmer, then make good connection of them.
2. Connect the D-SUB wire and DVI wire to the DDC program equipment and the PDP monitor.

6-2 Program and test process

1. Choose different DDC menu according to different customer , do use PAGE DOWN/PAGE UP to go to the submenu and parent menu until find the right model. Press enter to access the program interface. There will be shown RGB on the screen. Then switch to RGB program on the DDC connector. Press any key to access RGB program interface ,then there will be “input serial no.:" prompt on the screen.
2. Use Bar Readers to read the serial no to the program, then make sure the serial no you have read is the same as on the barcode. Then set the PDP to blue screen mode, press enter to start.
3. Watch the information of the program, it means programmed OK when the following interface come out.
please CHECK Manufacturer Name、 Vendor Assigned Code、 Model Name、 Serial Number :
****[????????****](same as Barcode)、 Week of Manufacture :**, Year of Manufacture :****、 Checksum :
** (same as the last byte of data table, reference to the note of RGB programming picture) and so on.
4. Press Enter to access RGB DDC test interface, follow the DDC test picture, CHECK Manufacturer Name、 Vendor Assigned Code、 Model Name、 Serial Number : ****[????????****](same as Barcode)、 Week of Manufacture :**, Year of Manufacture ****、 Video Input : Analog、 Checksum :** (same as the last byte of data table, reference to the note of RGB programming picture) and so on.
5. Press any key to access DVI program interface, there will be “DVI” shown on the screen. Switch the of switch on the DDC connector, press any key to access DVI program interface,there will be “input serial no.:" promote.
6. Use Bar Readers to read the serial no to the program, then make sure the serial no you have read is the same as on the barcode. Then set the PDP to blue screen mode, press enter to start.
7. Watch the information of the program, it means programmed OK when the following interface come out.
please CHECK Manufacturer Name、 Vendor Assigned Code、 Model Name、 Serial Number :
****[????????****](same as Barcode)、 Week of Manufacture :**, Year of Manufacture :****、 Checksum :
** (same as the last byte of data table, reference to the note of DVI programming picture) and so on.
8. Press Enter to access DVI DDC test interface, follow the DDC test picture, CHECK Manufacturer Name、 Vendor Assigned Code、 Model Name、 Serial Number : ****[????????****](same as Barcode)、 Week of Manufacture :**, Year of Manufacture ****、 Video Input : Analog、 Checksum :** (same as the last byte of data table, reference to the note of DVI programming picture) and so on. If the recording is failure, check the connection of equipment and record again from the step4.If all of these work does not take work ,please ask IE department for help.
9. Notice :the “?” and “*” symbol will be changed according to the year of manufacture ,and so on.

7、Flash Update

7-1 The list of Instrument

- 1、Prepare 1 piece of RS232 cable (The Pin connection see the Figure-1, If difference, please re-connect the cable) and 1 set of PC.
- 2、Connect the RS232 cable with PC and PDP(See the Figure-2).

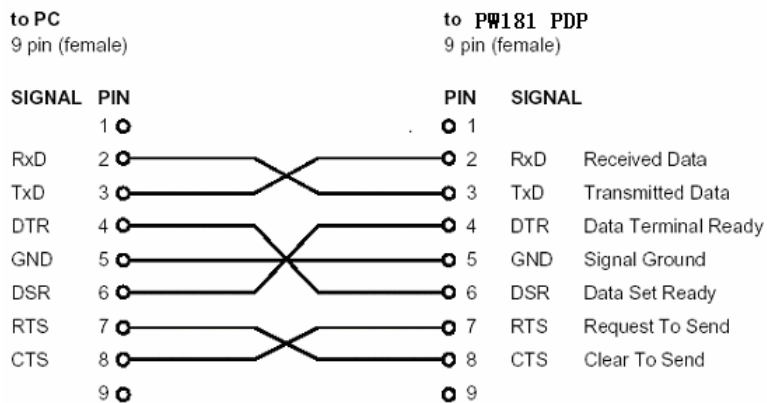


Figure-1

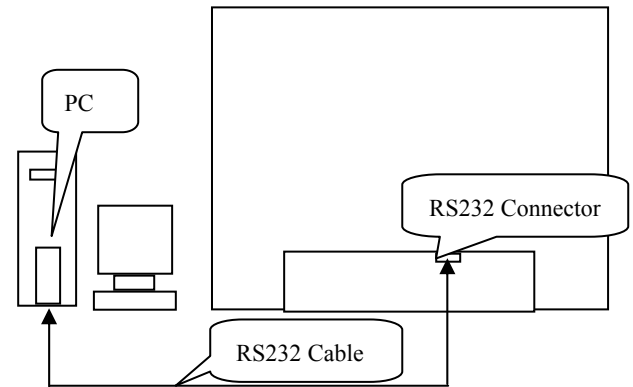


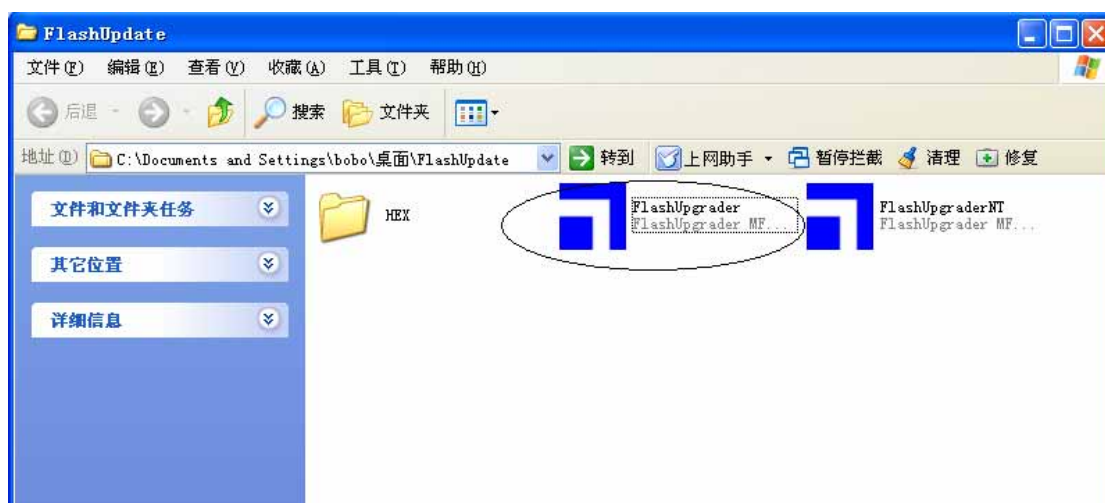
Figure-2

7-2 Flash Update

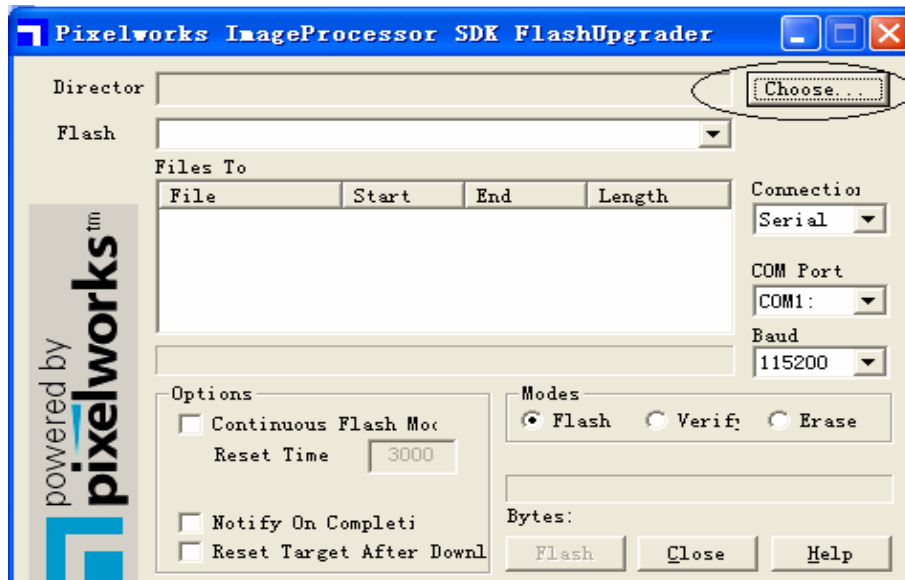
FlashUpgrader is a Windows utility that installs hex files into the FLASH ROM of the target ImageProcessor system. The FlashUpgrader is a Windows-based application.

Downloading is done through an RS-232 connection, which is bidirectional and serial.

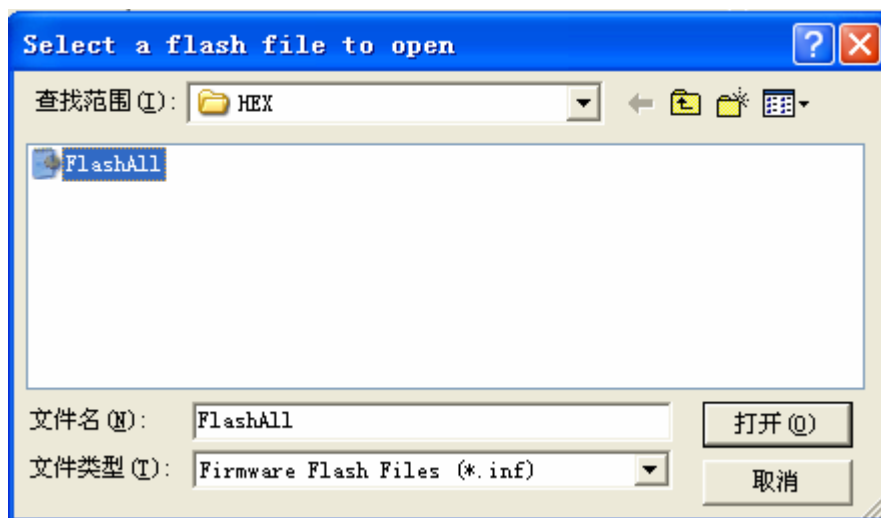
Step 1: Open the file FlashUpgrader



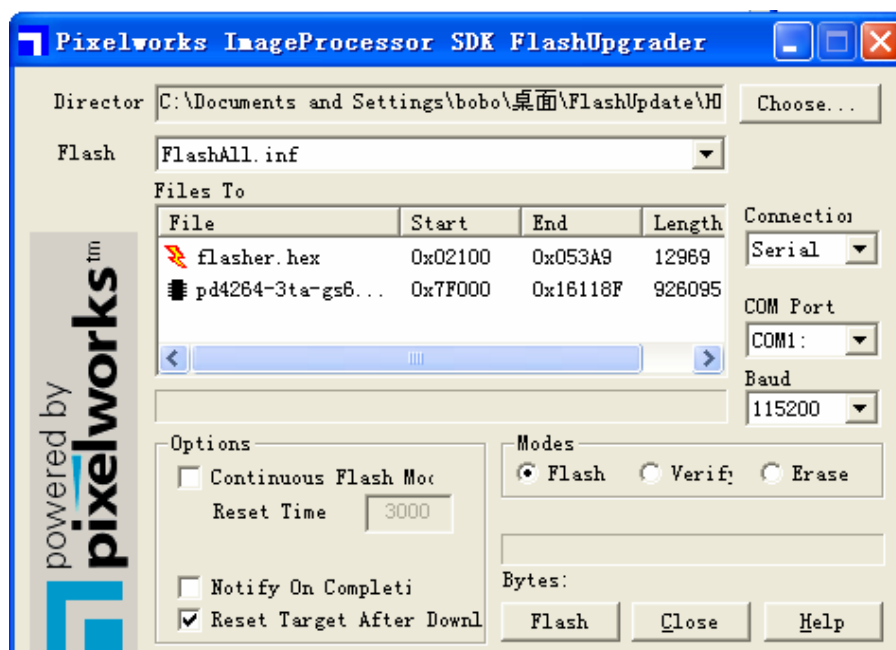
Step 2: Choose the director of the file to flash



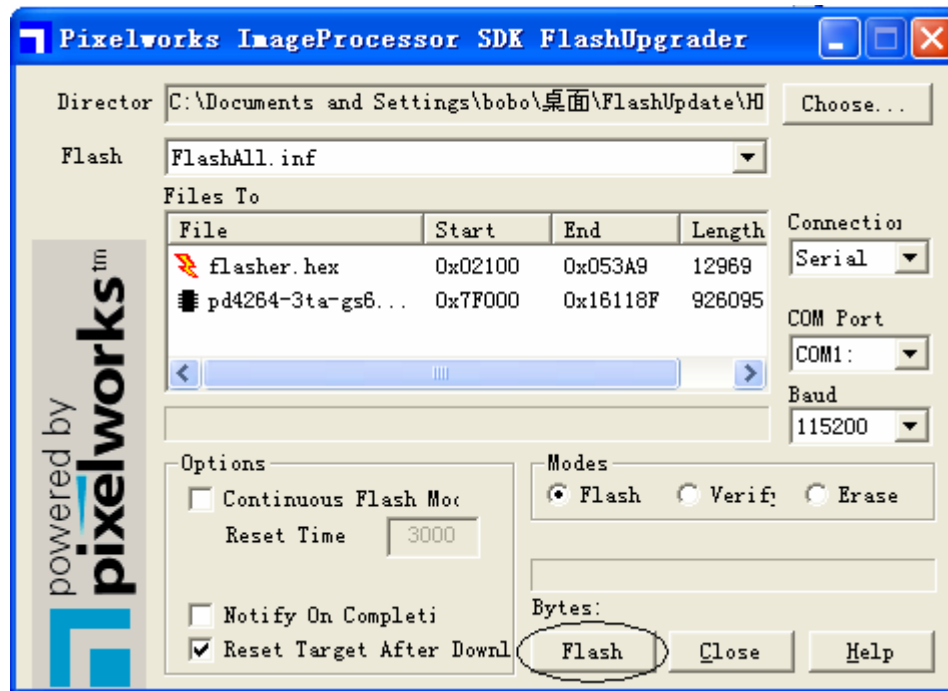
Step 3: Flash only the file required



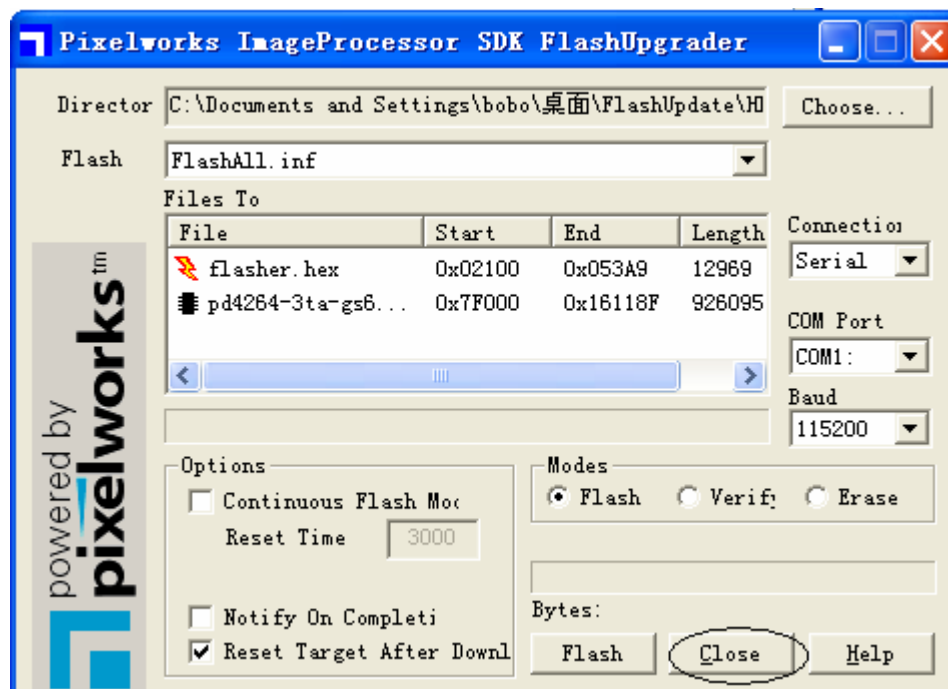
Step 4: Connect the computer's serial port (usually COM1) to the serial port of the Pixelworks evaluation board using a null modem cable, and select speed.



Step 5: Press reset or cycle the power from the Evaluation Board and click “Flash” .



Step 6: View hex file flashing progress,after the files have been downloaded, Click “Close” to exit

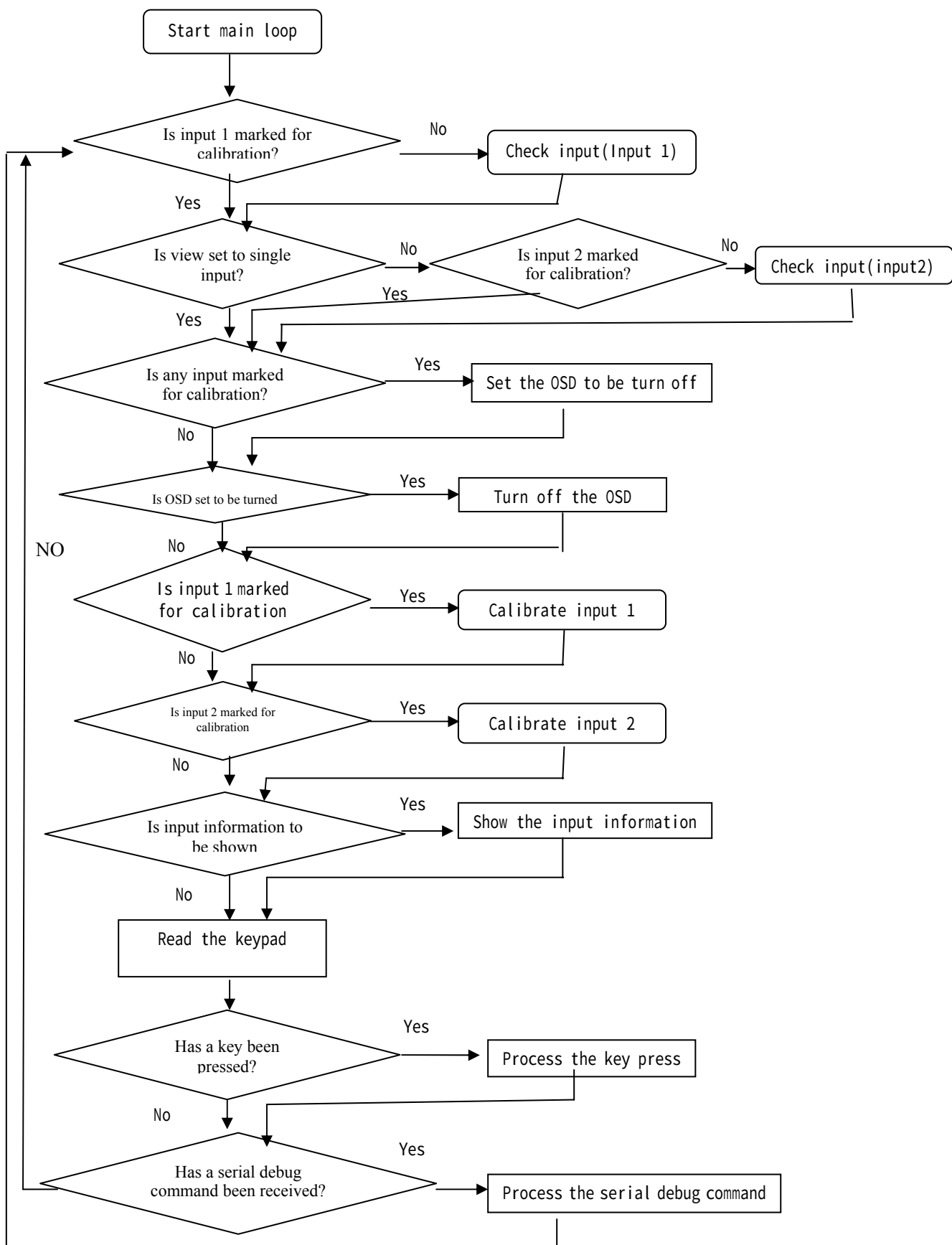


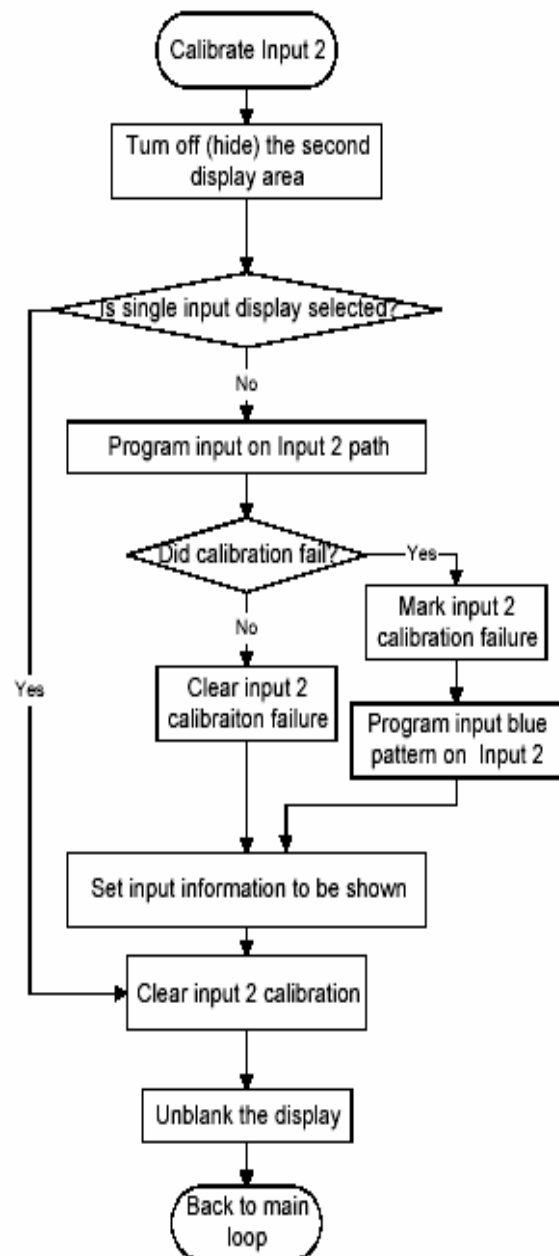
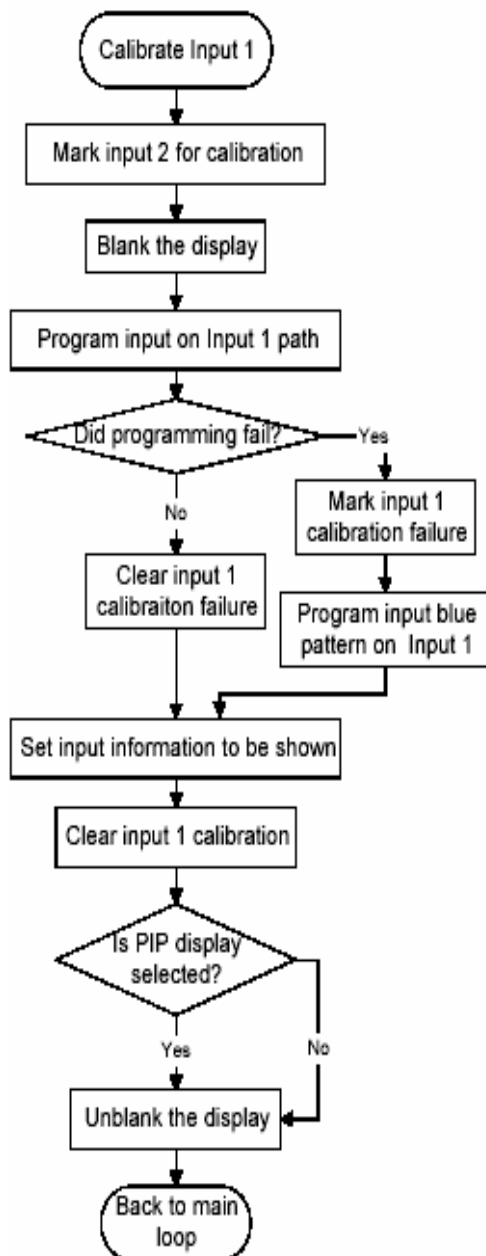
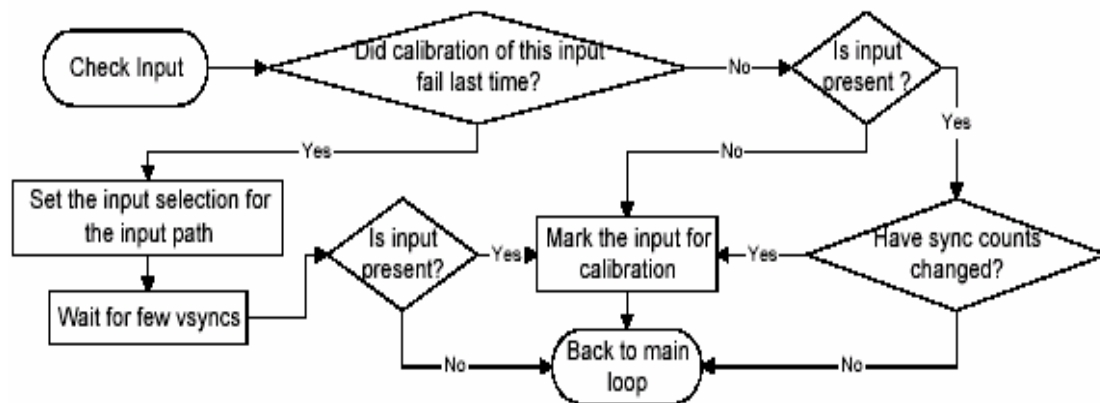
The FlashUpgrader, in conjunction with the code in the flasher.hex file, downloads *.hex files to the Flash ROM on the target board.

The FlashUpgrader communicates with the boot code as described in the next section. If communication is established, FlashUpgrader downloads the flasher.hex file. Then the boot code executes the code contained in the flasher.hex file. FlashUpgrader downloads the files listed in a *.inf file that you choose when using FlashUpgrader. This typically includes one or more of the following files: gui.hex, config.hex, romcode.hex, and bootcode.hex.

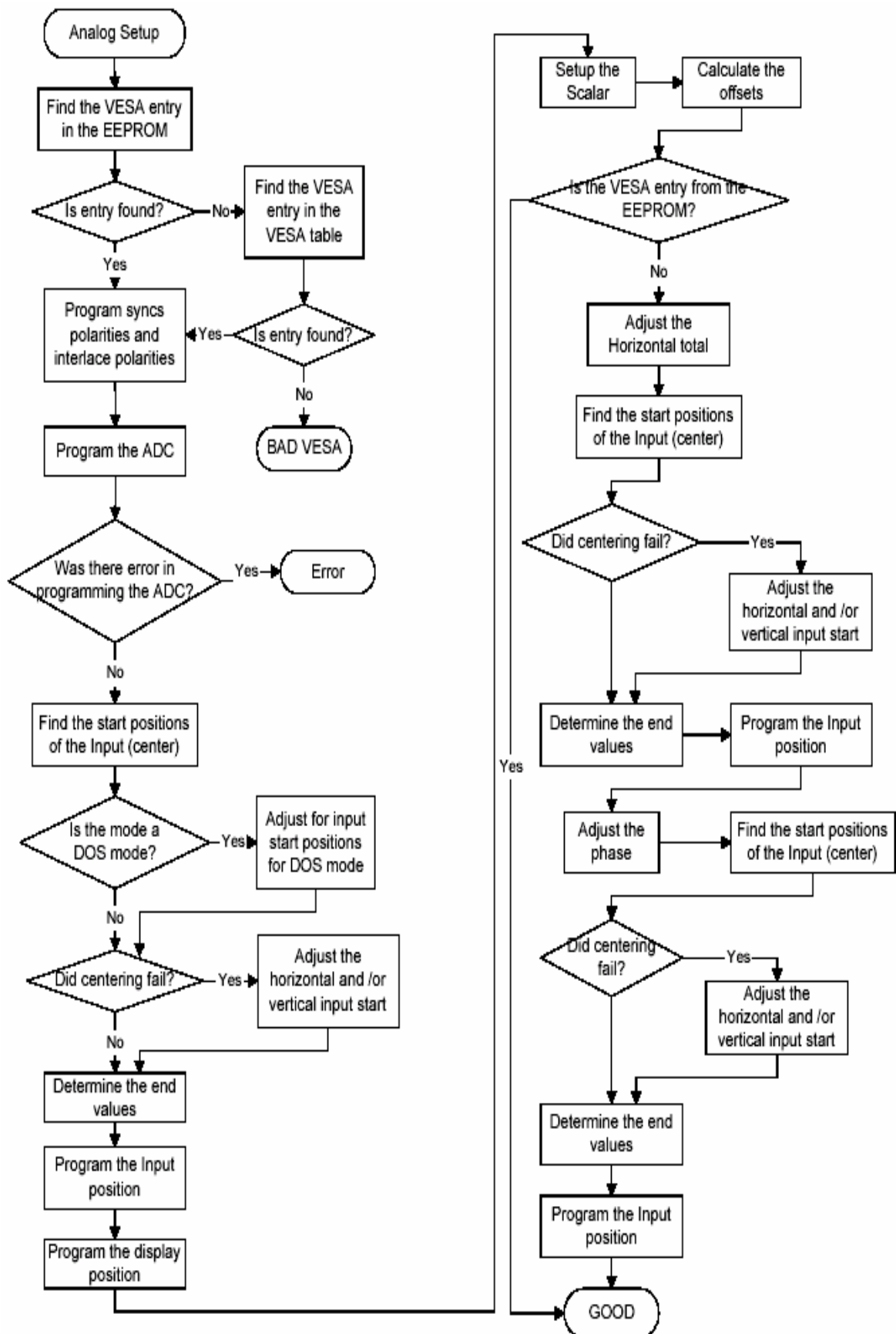
8、 Software Flow Chat

8-1 Main loop Flow Chat

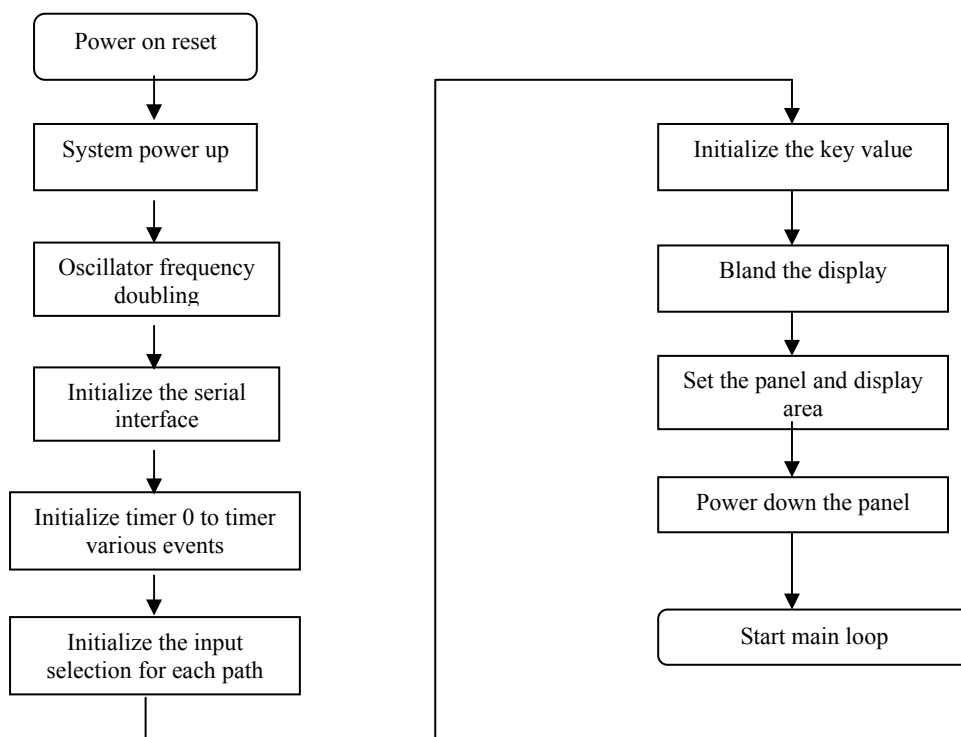




8-2 Analog setup flow chat

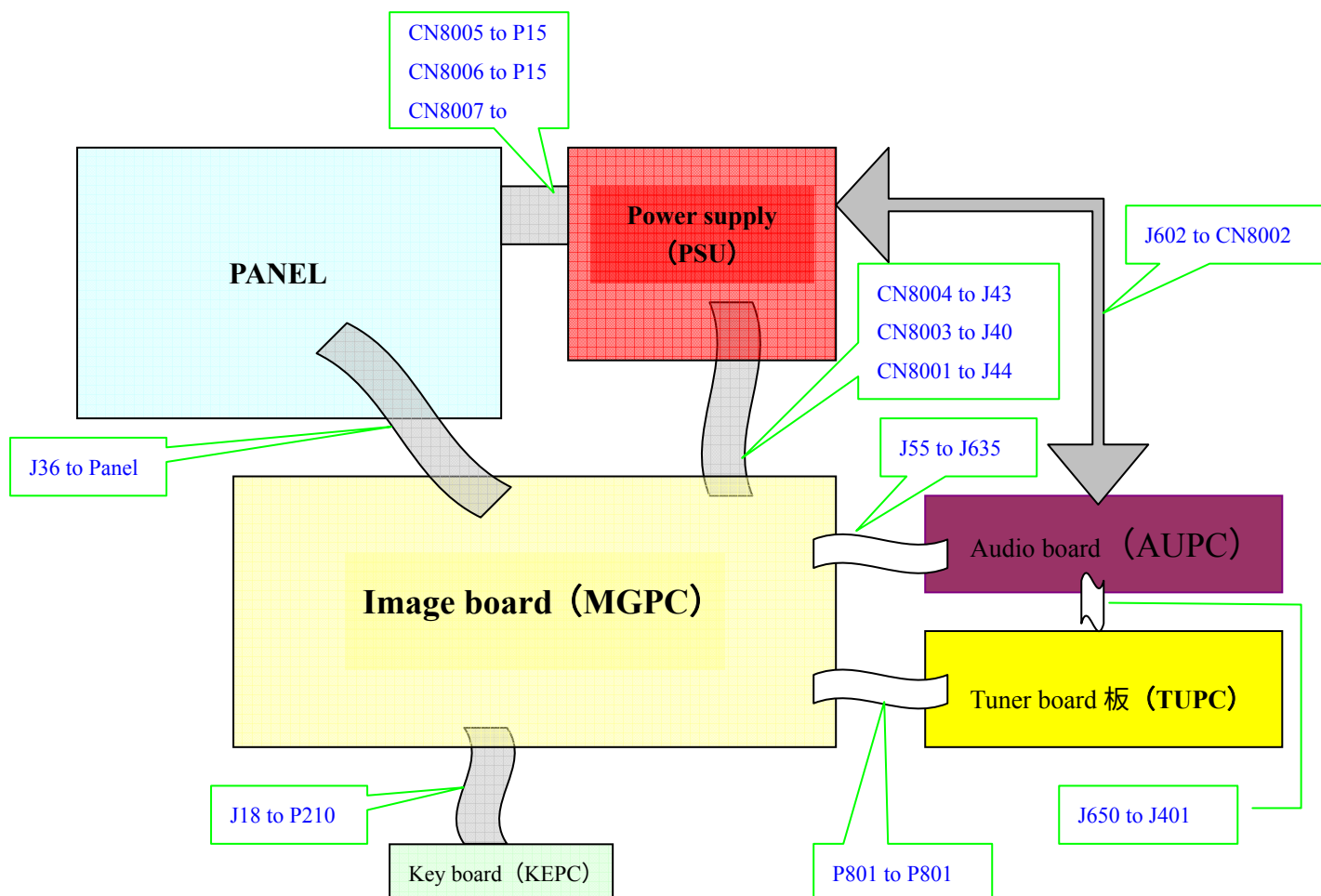


8-3 Power on reset flow chat



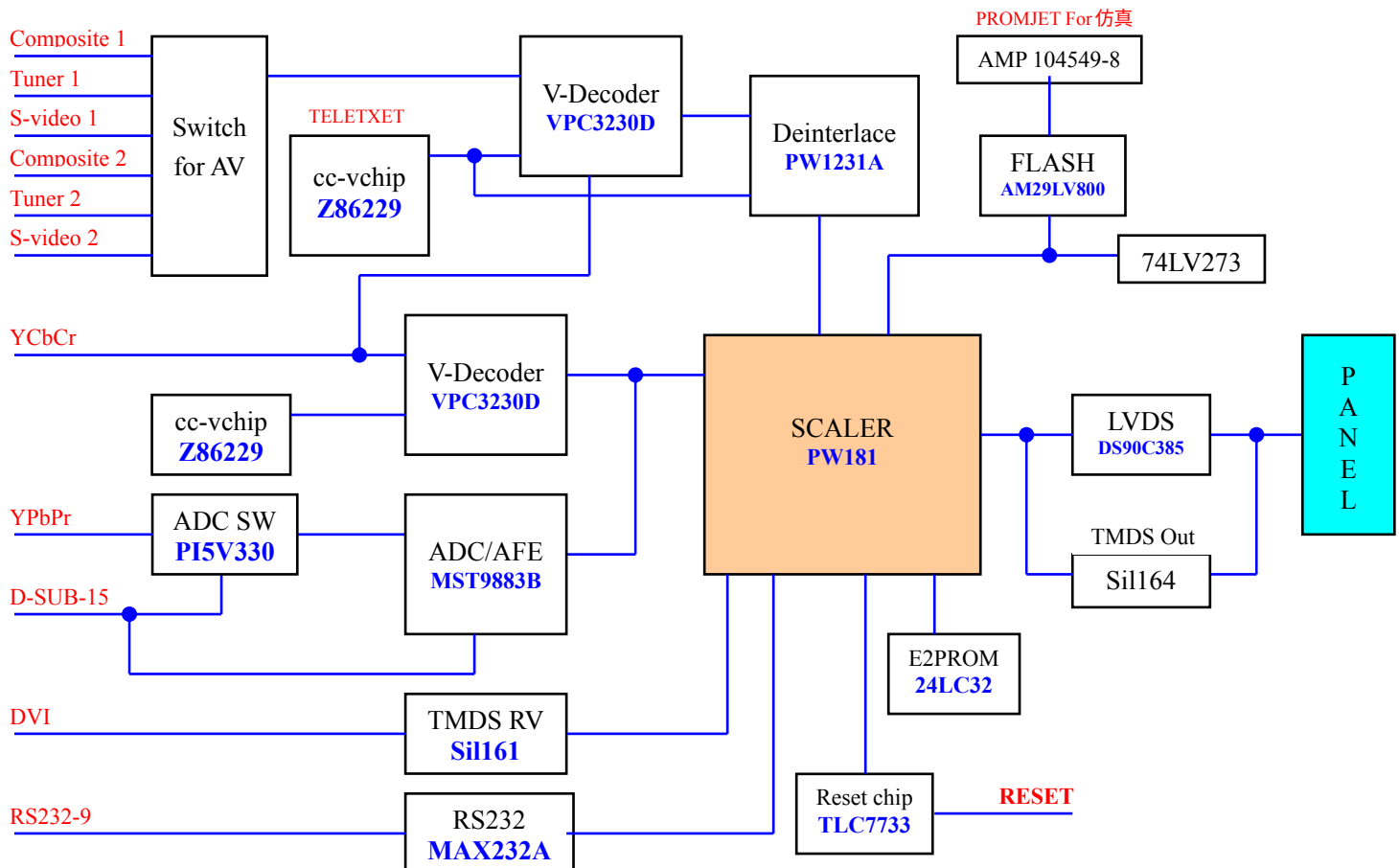
9、Block diagram & Explain

9-1 PDP block diagram and functions



- 1) **Image board(MGPC)**: Decode the video signal, De-interlace, and send digital signals (LVDS signal) sent from image Board and display.
- 2) **Audio board(AUPC)**: Audio signal AMP. and balance process.
- 3) **Tuner board(TUPC)**: Input signal interface and tuner.
- 4) **Key board(KEPC)**: POWER, INPUT source, MANUAL, Volume+/- and CH+/-.
- 5) **Power ON/OFF**: AC power switch.

9-2 Image board block diagram and signal introduce/process



9-2-1 Input signal introduce

1. **VIDEO**: transmit bright & chroma signal, it is general, its picture quality is equal to the general VCD. S-VIDEO transmit the bright and the chroma single, and can reduce/control the cross-interfere, it is better than the Video.
2. **RGB&D-SUB(Pc interface)**: general RGB simulative input interface.
3. **YCbCr(NTSC/PAL)**: is composed of one bright and two chromatism signals U/V. due to the eye is more sensitive for bright than chroma, RGB via the formulae $Y=0.39R+0.50G+0.11B$ to transform into one bright and two chromatism signals U(R-Y), V(B-Y).
4. **VIDEO, S-VIDEO, YCBCR**: the frequency 15.6KHZ 50(PAL)/60HZ(NTSC), interleaved simulative signal.
5. **YPbPr**: non-interlaced signal, belong to DTV scope, support 480P,720P,1080i format, current is NTSC.
6. **DVI**: digital Visual Interface, has 29pin (DVI-I) and 25pin (DVI-D), now many top grade display card own it.

9-2-2 Signal process

VIDEO signal: via Y/C separate, decode, de-interleaving to non-interlaced digital signal, and then sent it to SCALER chip to process the image, then via the low voltage difference signal transform chip sent to PANEL interface.

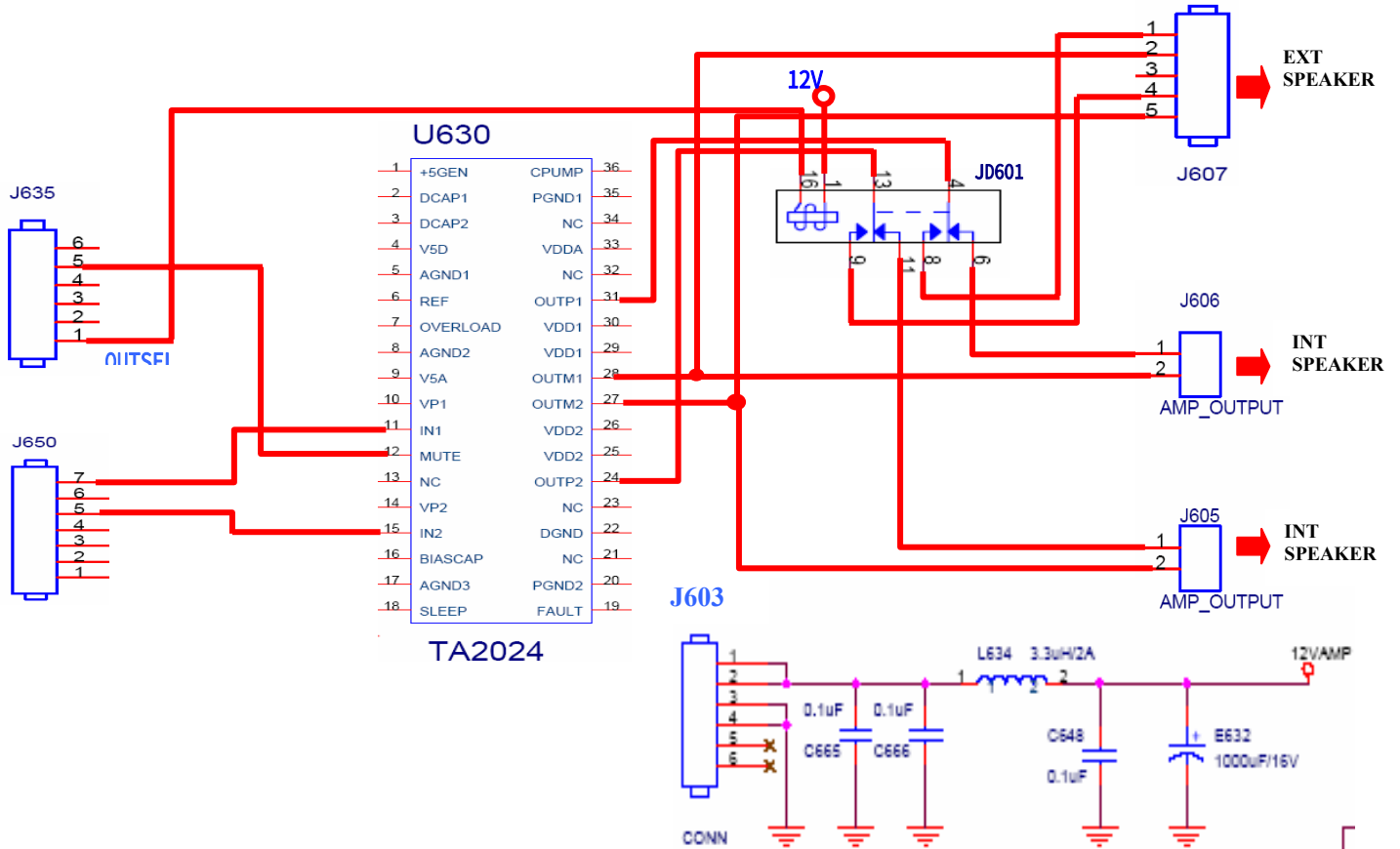
S-VIDEO, YcbCr signal: no via Y/C separate, and directly send it to decode circuit, and the following process is same as the Video.

YPbPr, RGB signal: via A/D send to SCALER chip for processing the image.

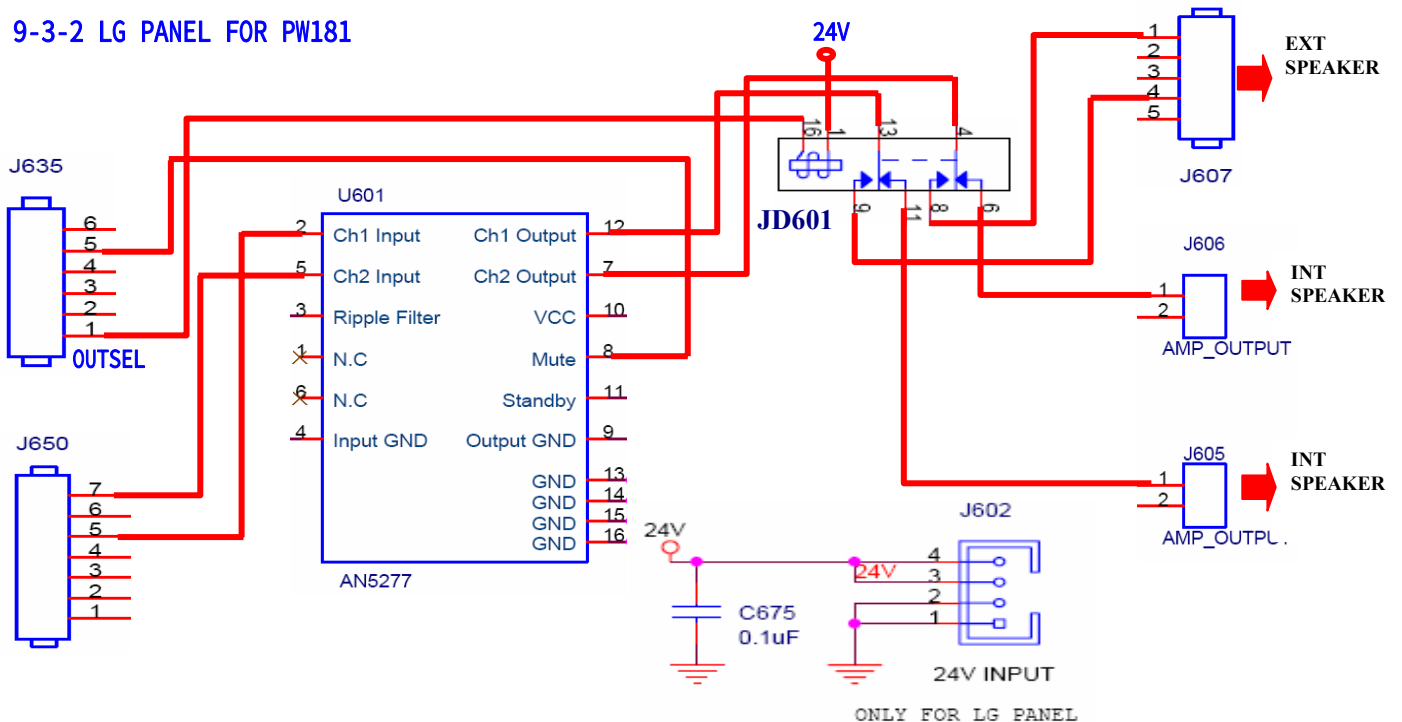
DVI signal: via digital process chip transform into digital signal then sent it to SCALER chip to process the image.

9-3 Audio board block

9-3-1 SAMSUNG PANEL FOR PW181



9-3-2 LG PANEL FOR PW181



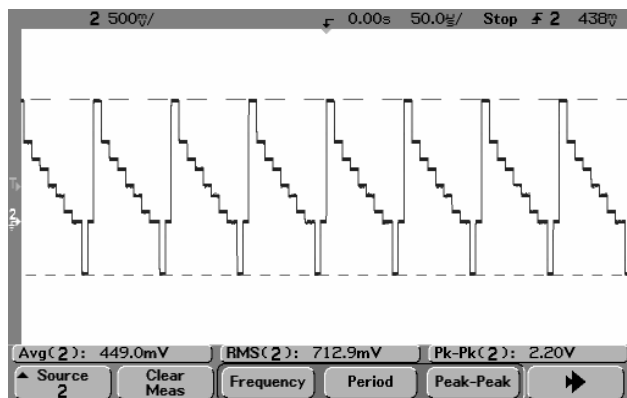
10、 Waveform of signal

10-1 Waveform of input signal

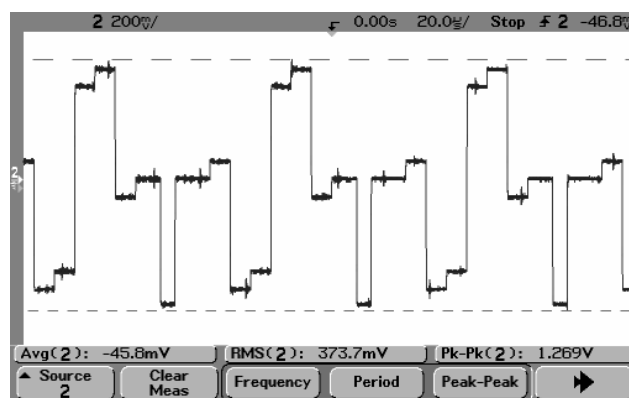
(Instrument outputs the sub board signal, Instrument : VG828/ TG19CC/Oscilloscope)

YCbCr:Timing946 Pattern946 color bar picture

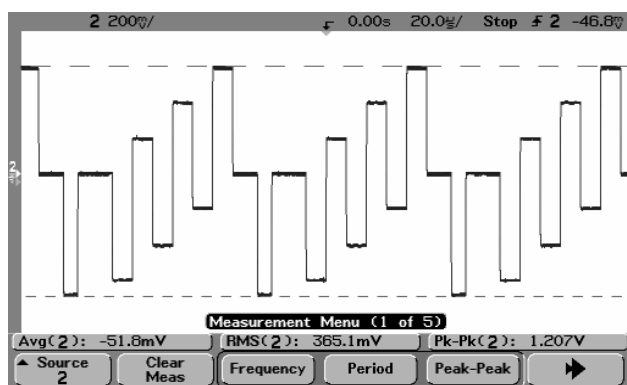
Y Luminance signal



R red signal

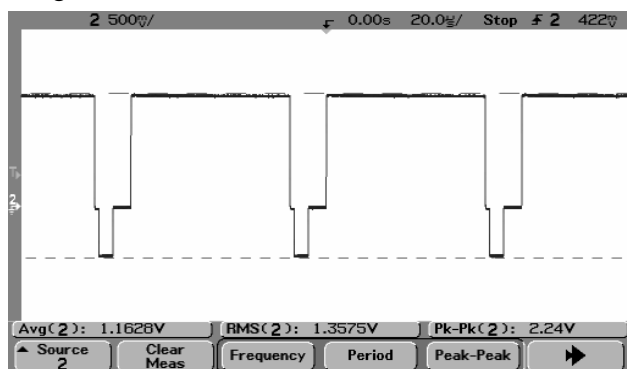


B blue signal



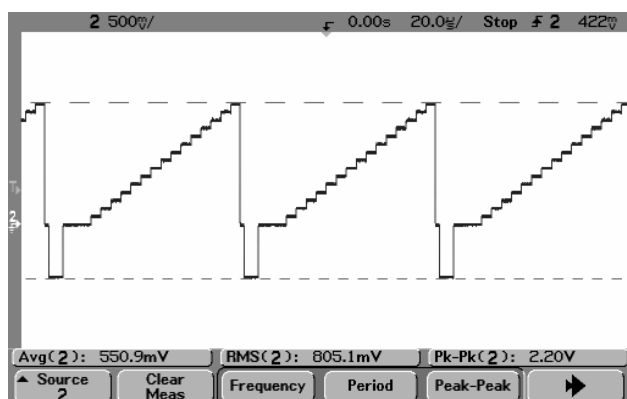
YCbCr:Timing 949 Pattern936 full white picture

Y signal



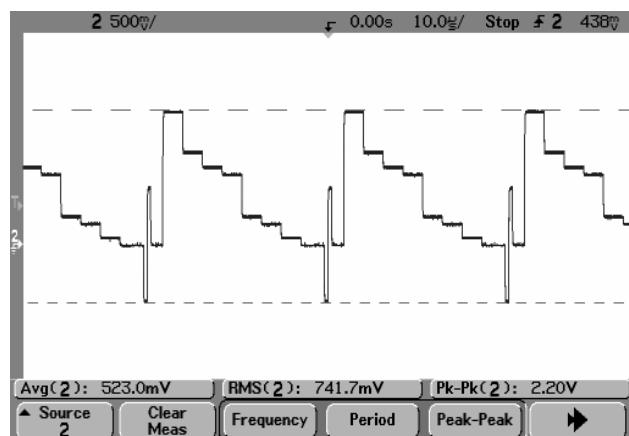
YCbCr:Timing 949 Pattern921 full white picture

Y signal

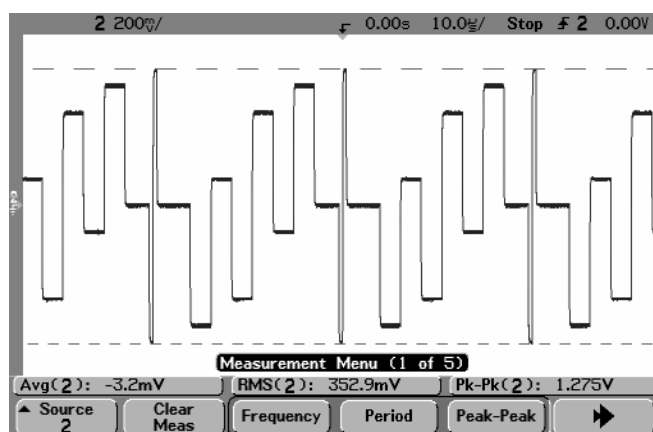


YPbPr:Timing955 Pattern946 color bar picture

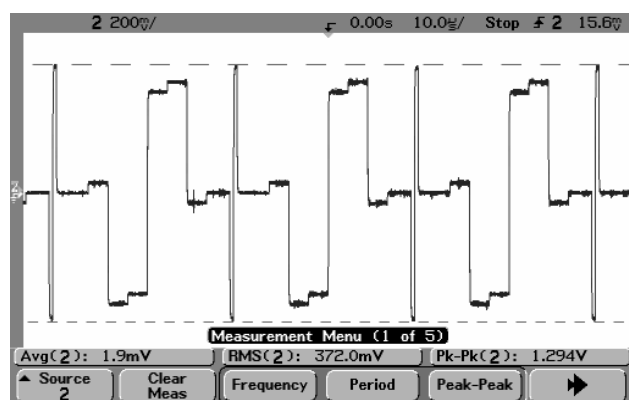
Y Luminance signal



R red signal

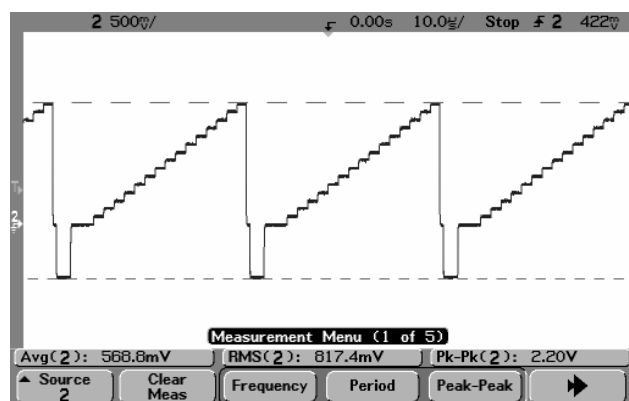


B blue signal



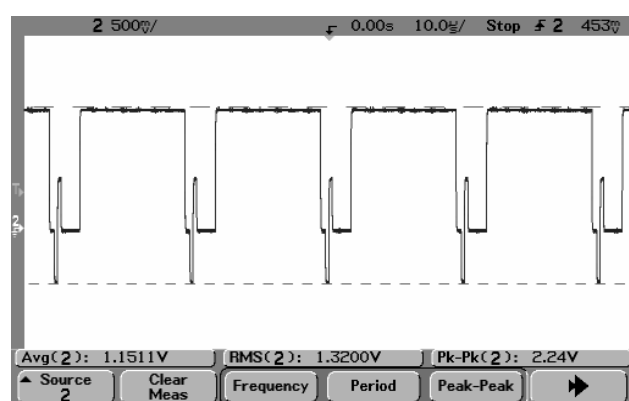
YPbPr:Timing953 Pattern921 gray picture

Y signal

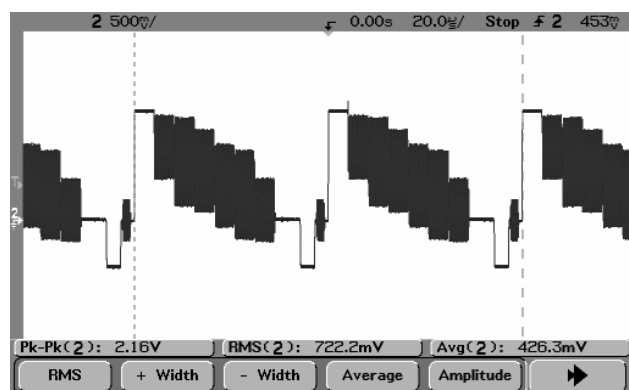


YPbPr:Timing954 Pattern936 full white picture

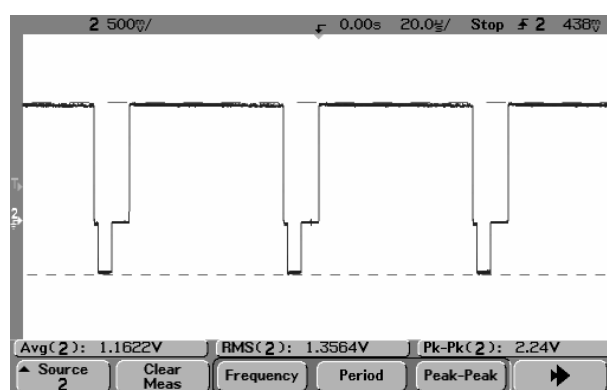
Y signal



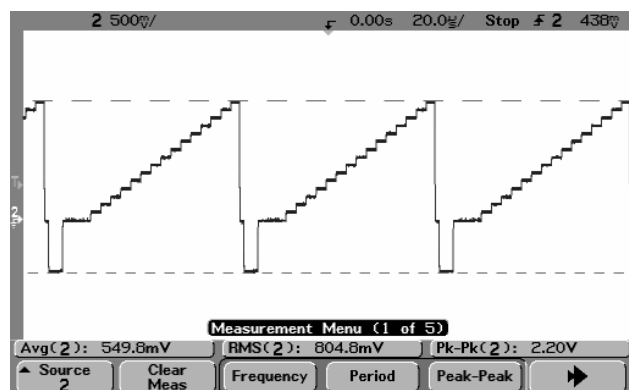
Video:Timing946 Pattern946 color bar picture



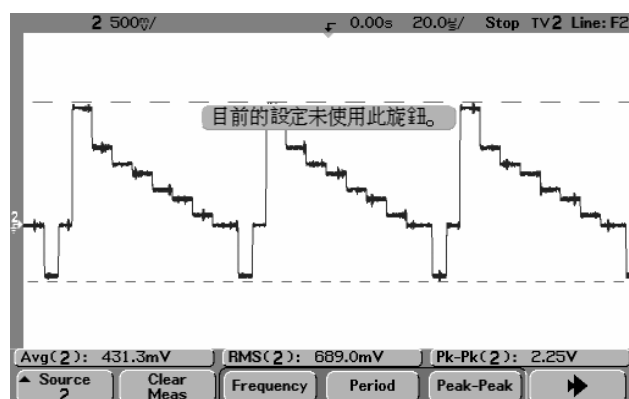
Video:Timing949 Pattern936 full white picture



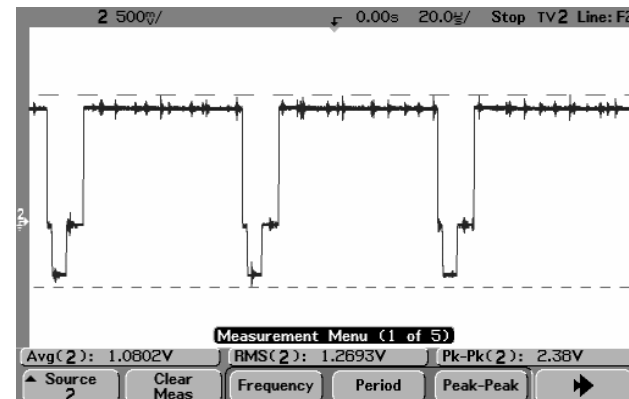
Video:Timing949 Pattern921 gray picture



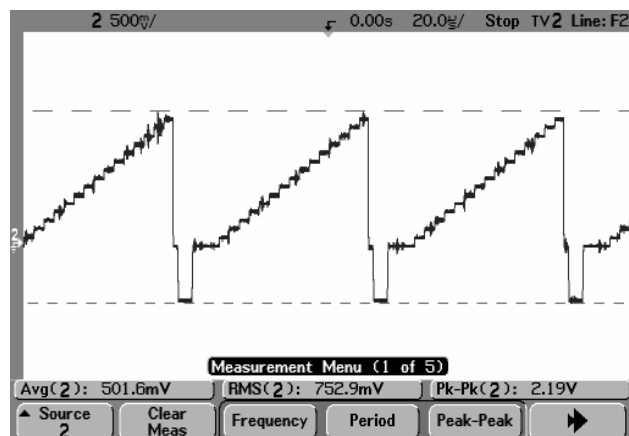
S-video:Timing946 Patern946 color bar picture
Y signal



S-video:Timing949 Pattern936 full white picture
Y signal

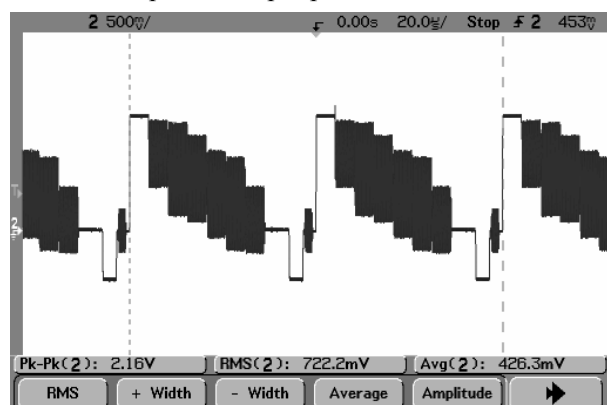


S-video:Timing949 Pattern921 gray picture
Y signal

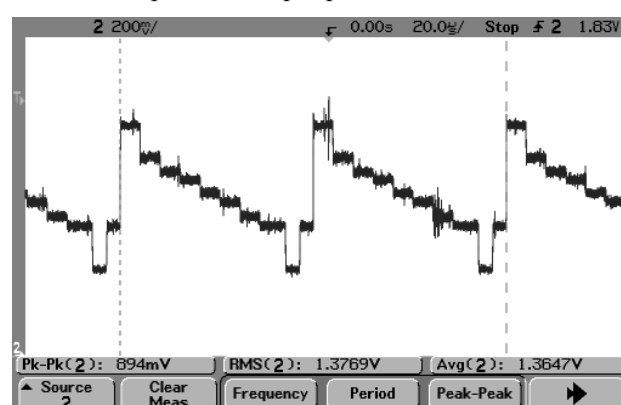


10-2 Testing point and waveform(MGPC)

Video:Timing946 Pattern946 color bar picture
U5 (Y/C separate) input pin2 C33

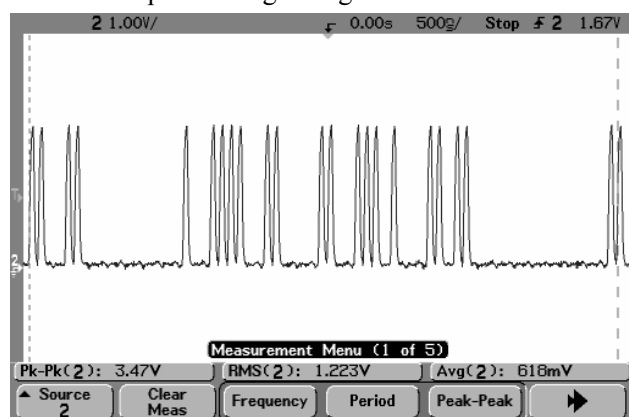


U5 (Y/C separate) output pin34/32 C534/C535



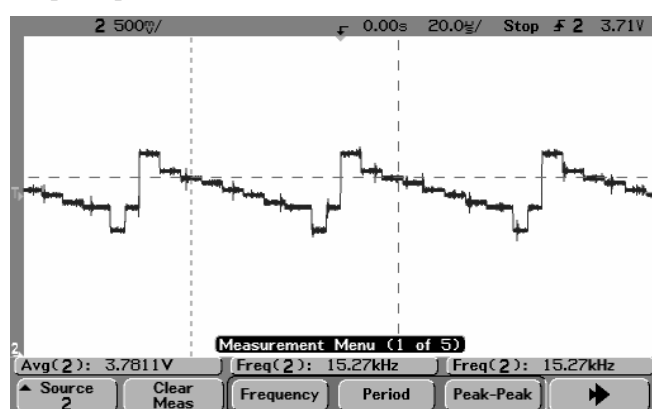
Video:Timing 949 Pattern936 full white picture

Decoder output 8bit digital signal



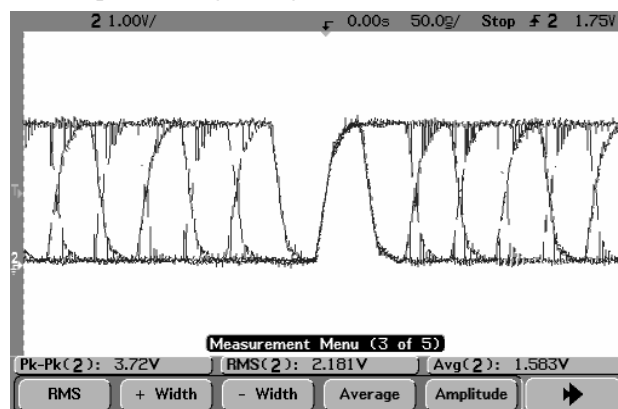
S-Video:Timing 946 Pattern946 color bar picture

U5 pin9, pin11



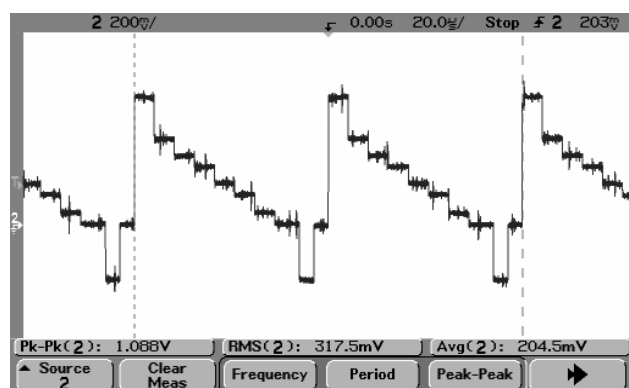
S-Video:Timing 949 Pattern946 color bar picture

U16 output 8bit digital signal

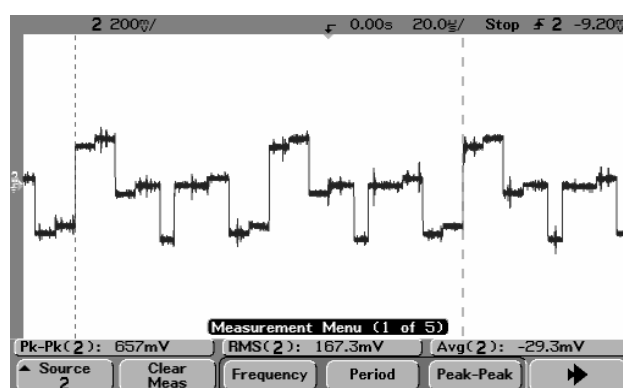


YCbCr:Timing946 Pattern946 color bar picture

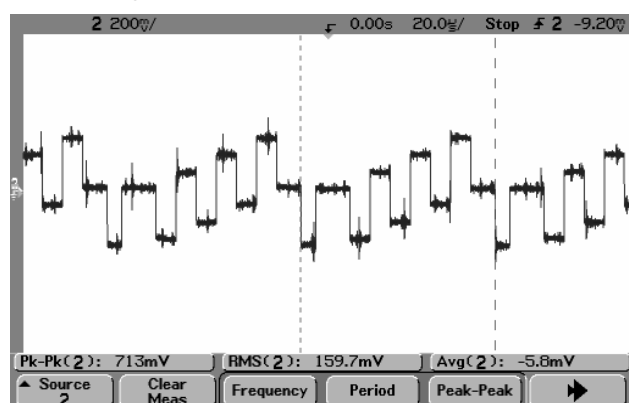
Y—C18 signal



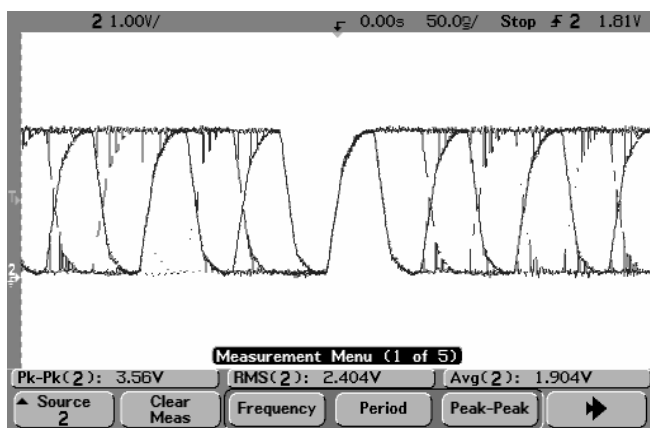
R—C20 signal



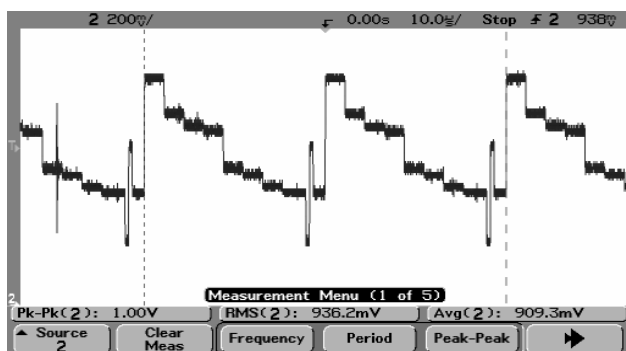
B—C19 signal



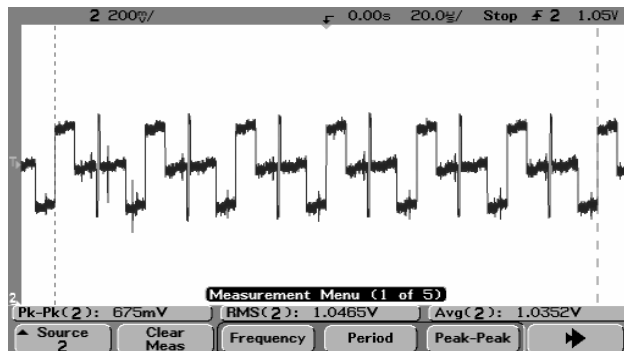
YCbCr:Timing 949、946 Pattern921、936、946 gray, color bar, full white picture
Decoder output 8bit digital signal



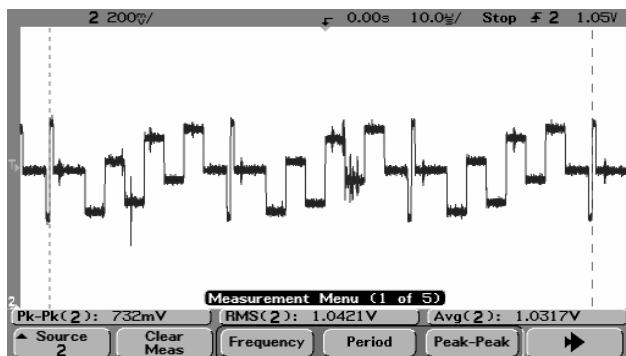
YPbPr:Timing 955 PATTERN946 color bar picture
Y—L17 signal



R—L19 signal



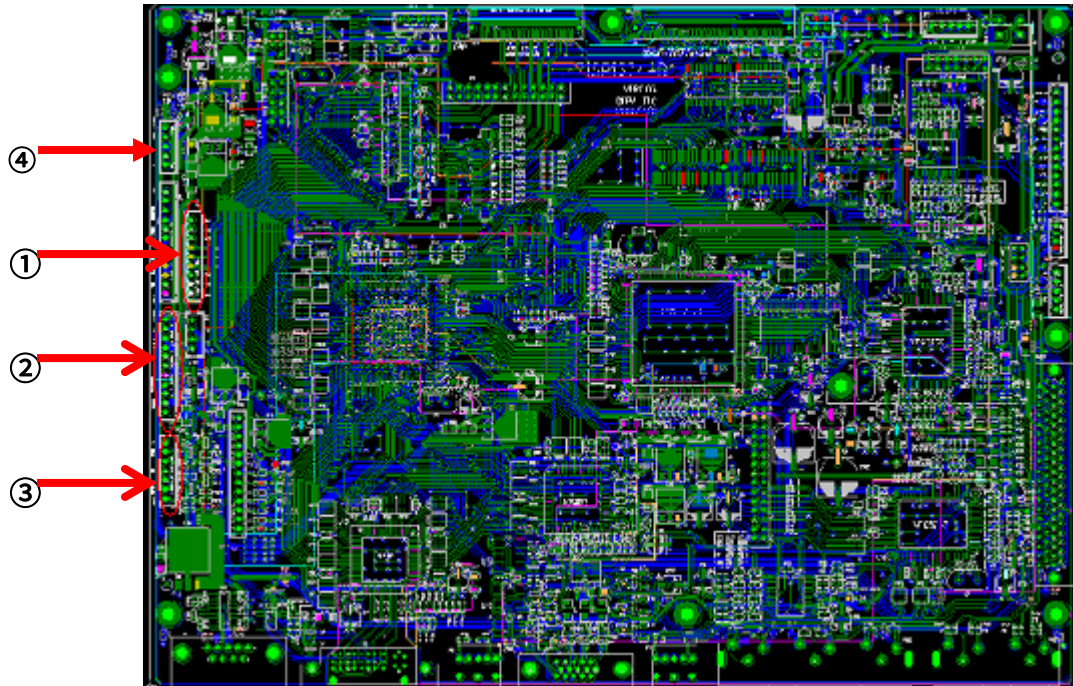
B—L18 signal



11、 Check and Measure

11-1 Image board

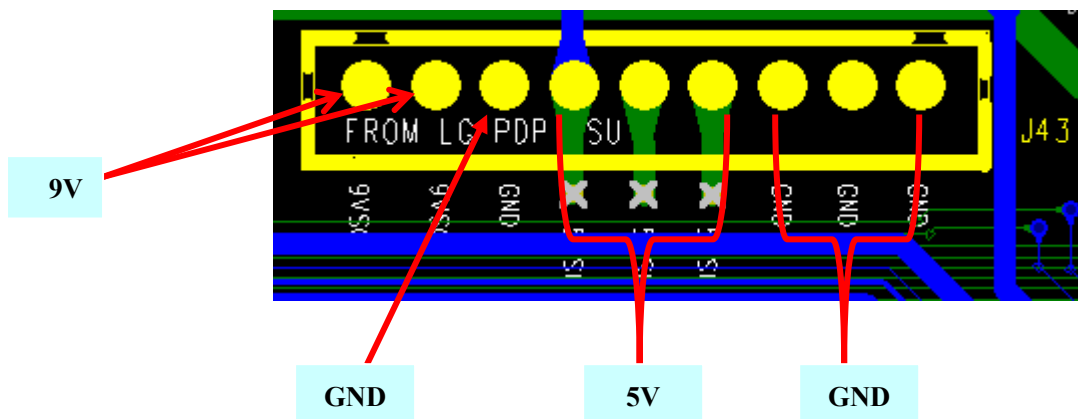
11-1-1 Power Check and Measure



Supply with getting red arrow point three interface J43, J40 and J44 that identification come out for power, image of board with the interface among having picture, it corresponding power make detection method separately among following several picture. :

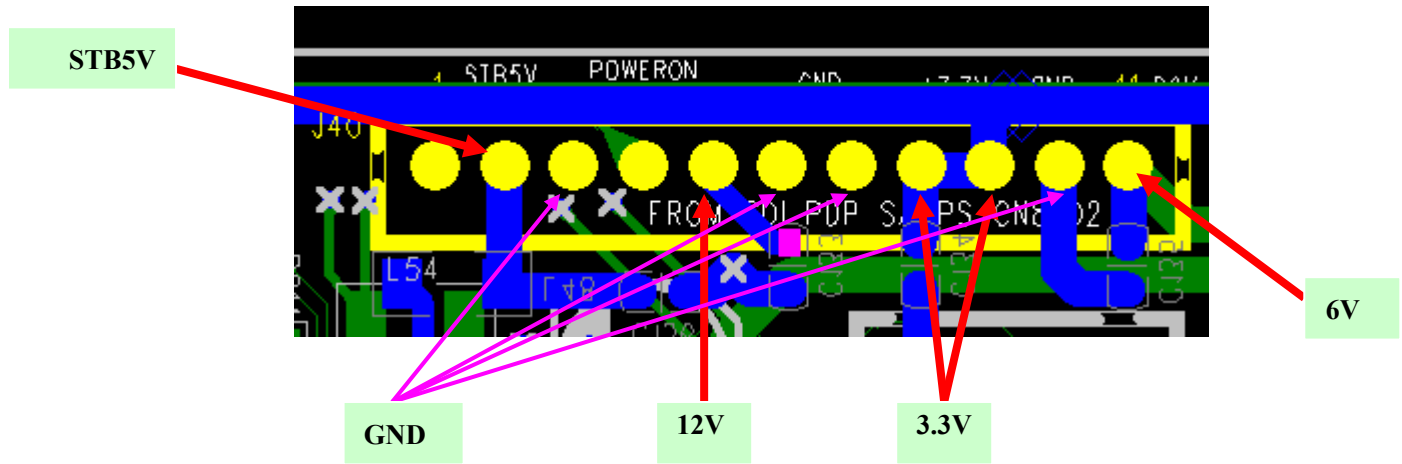
- ①. In the following the first picture it is successively 1 to 9 pin of J43 from left to right: Among them, 3pin , 7pin, 8pin and 9pin are digital earth , 4pin, 5pin and 6pin connect 5V voltage, 1pin and 2pin connect 9V voltage.

The second picture it is 1 to 5 pin of CN704 from left to right: Among them, 2pin and 4pin of CN704 connect digital earth, 1pin of CN704 connect D6V voltage, 3pin of CN704 connect D12V voltage ,The following picture shows:



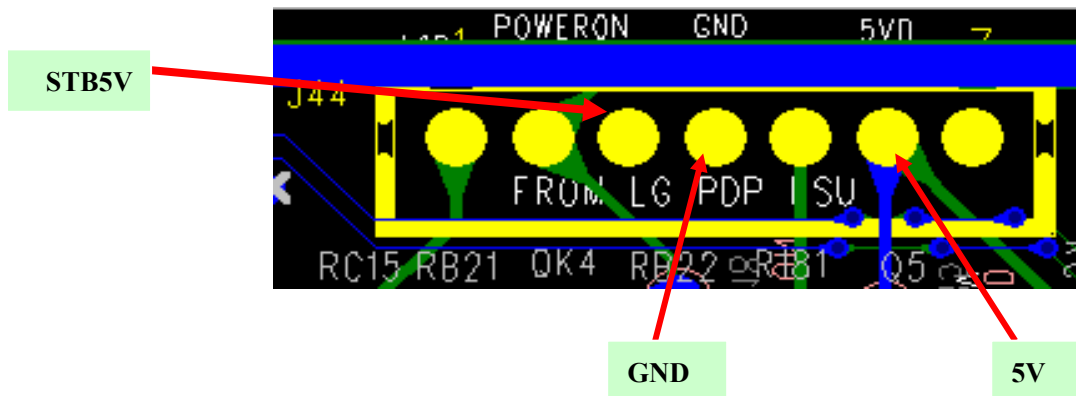
Remark: This interface for LG power

- ②. In the following picture it is successively 1 to 11 pin of J40 from left to right. Among them, The second pin connects STB5V, 3pin, 6pin, 7pin and 10pin are grounded digitally, 5pin connect D12V voltage, 8pin and 9pin connect D3.3V voltage, 11pin connect D6V voltage .The following picture shows:



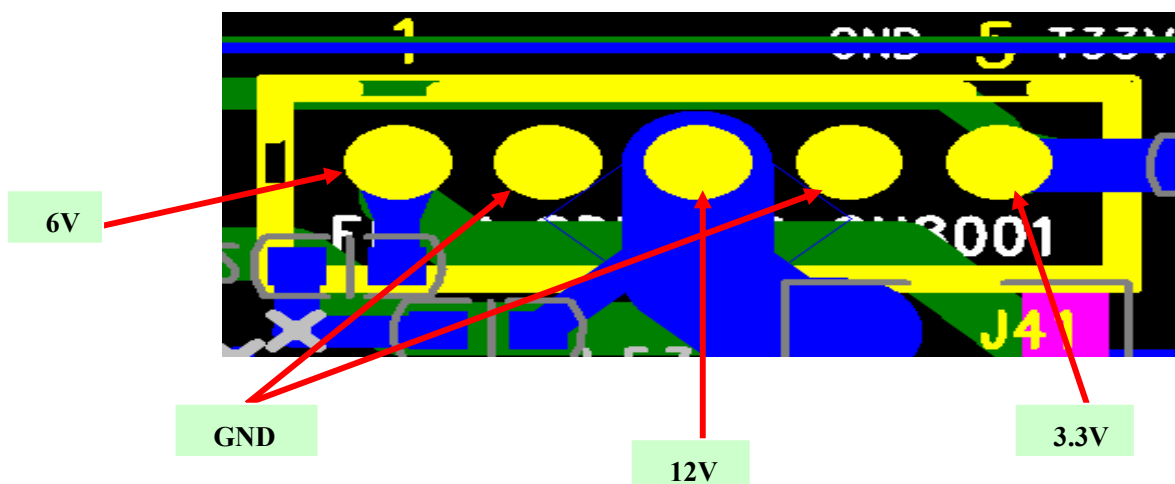
Remark: This interface for SAMSUNG power

- ③. In the following picture it is successively 1 to 5 pin of J41 from left to right. Among them, The 1pin connects D6V, 2pin and 4pin are grounded digitally, 3pin connect D12V voltage, 5pin connect D3.3V voltage. The following picture shows:



Remark: This interface for LG power

- ④. In the following picture it is successively 1 to 5 pin of J41 from left to right. Among them, The 1pin connects D6V, 2pin and 4pin are grounded digitally, 3pin connect D12V voltage, 5pin connect D3.3V voltage. The following picture shows:



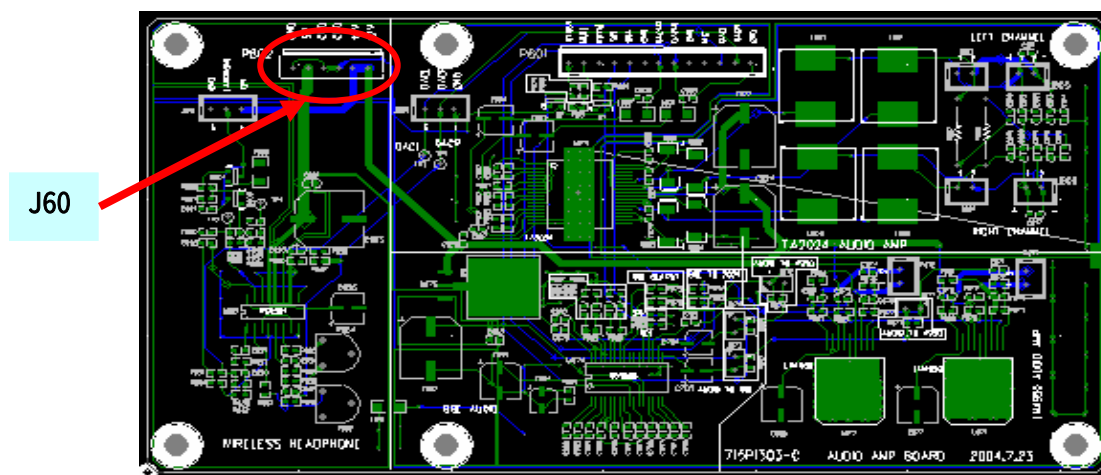
Remark: This interface for SAMSUNG power

11-1-2 Voltage value of IC necessary

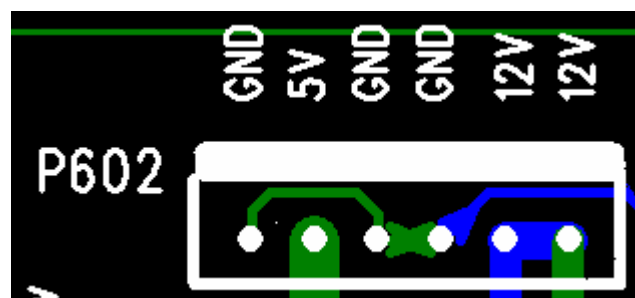
Voltage	Corresponding IC position and pin
3.3V	U14(MST9883)Pin(26,27,39,42,45,46,51,52,59,62); U20(29LV800BT) Pin12 和 Pin37; U52(74LV273A)Pin20; U53(74LV273A)Pin20
STB5V	U20 (PW181)
5V	U16(VPC3230D)Pin(59,67,69,76); U41(LT1117-5)Pin2;
6V	U41(LT1117-5)Pin3;
9V	L43; U42(LT1117-ADJ)Pin2; L902; U905(LT1117-ADJ)Pin3; L530; U5(TA8851CN)Pin18; L36; P801(FX-80S-1.27DSL MALE)Pin3
12V	U42(LT1117-ADJ) Pin3; U675(TA2024) Pin(25,26,29,30,33,36); C621; C622; C628

11-2 Audio baord

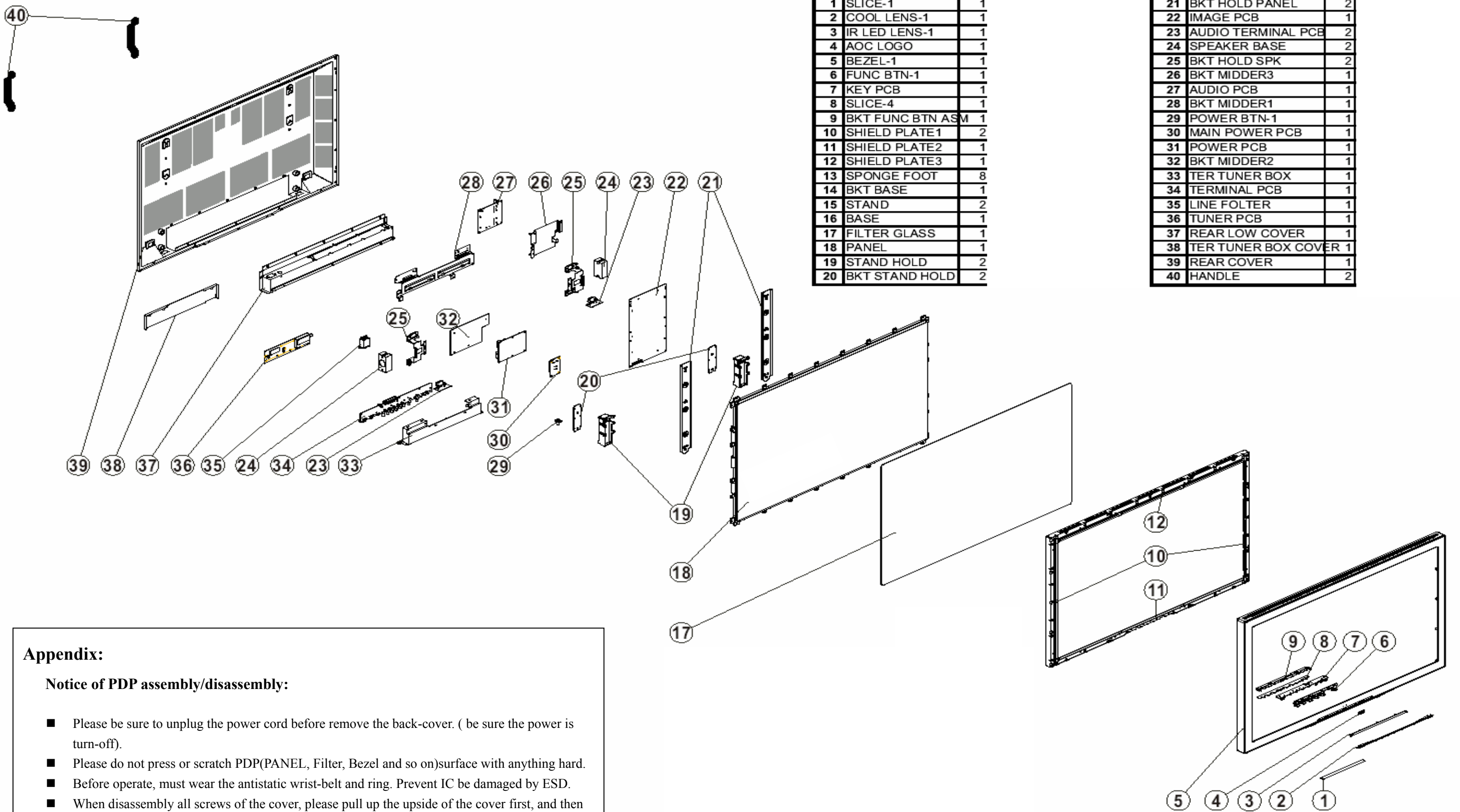
Supply with getting red arrow point one interface J60 that identification come out for power.



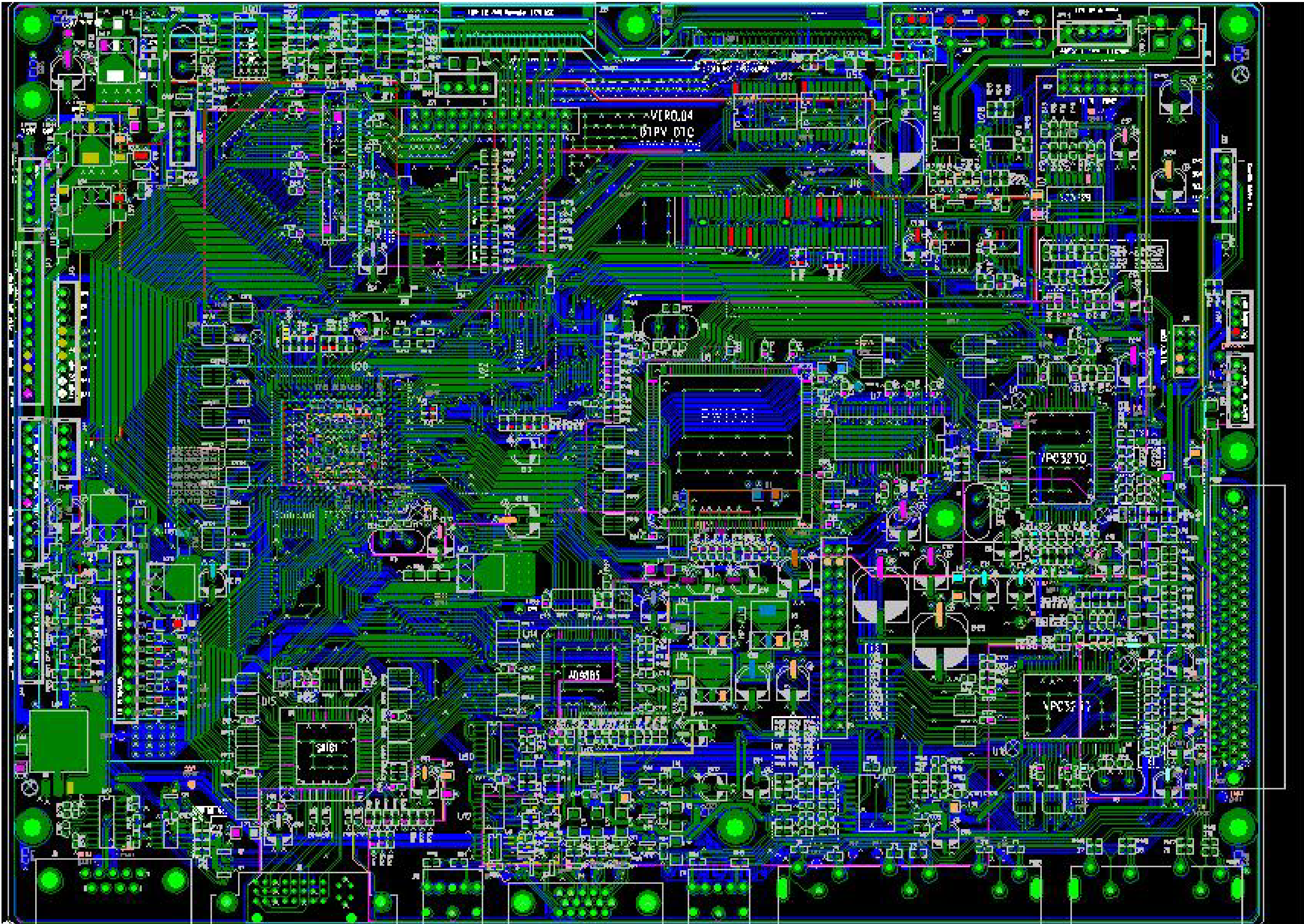
Shown order connect power(it depends on to be 1pin to 6pin from left to right) according to the picture :



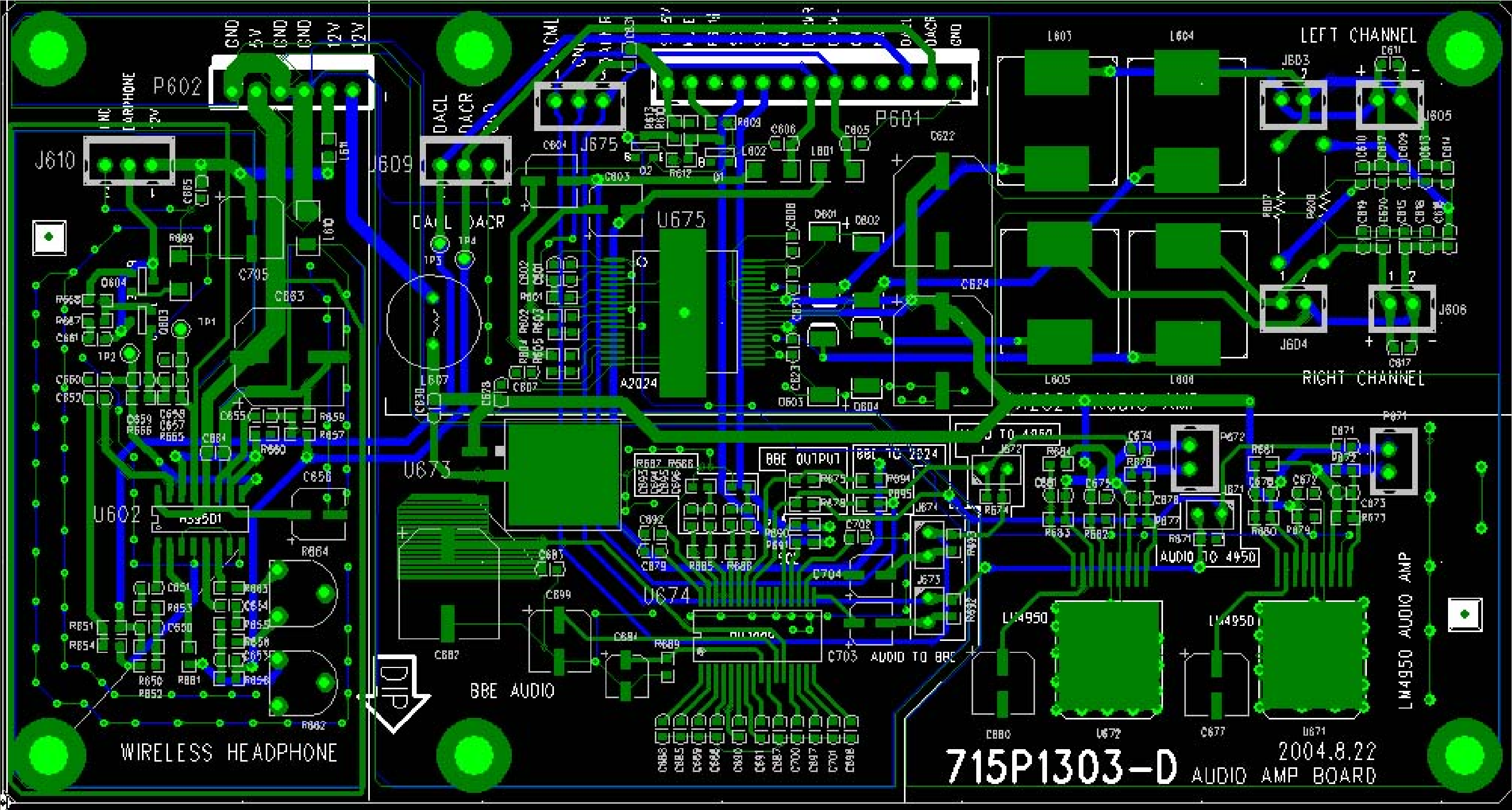
12、Mechanical of cabinet front disassembly



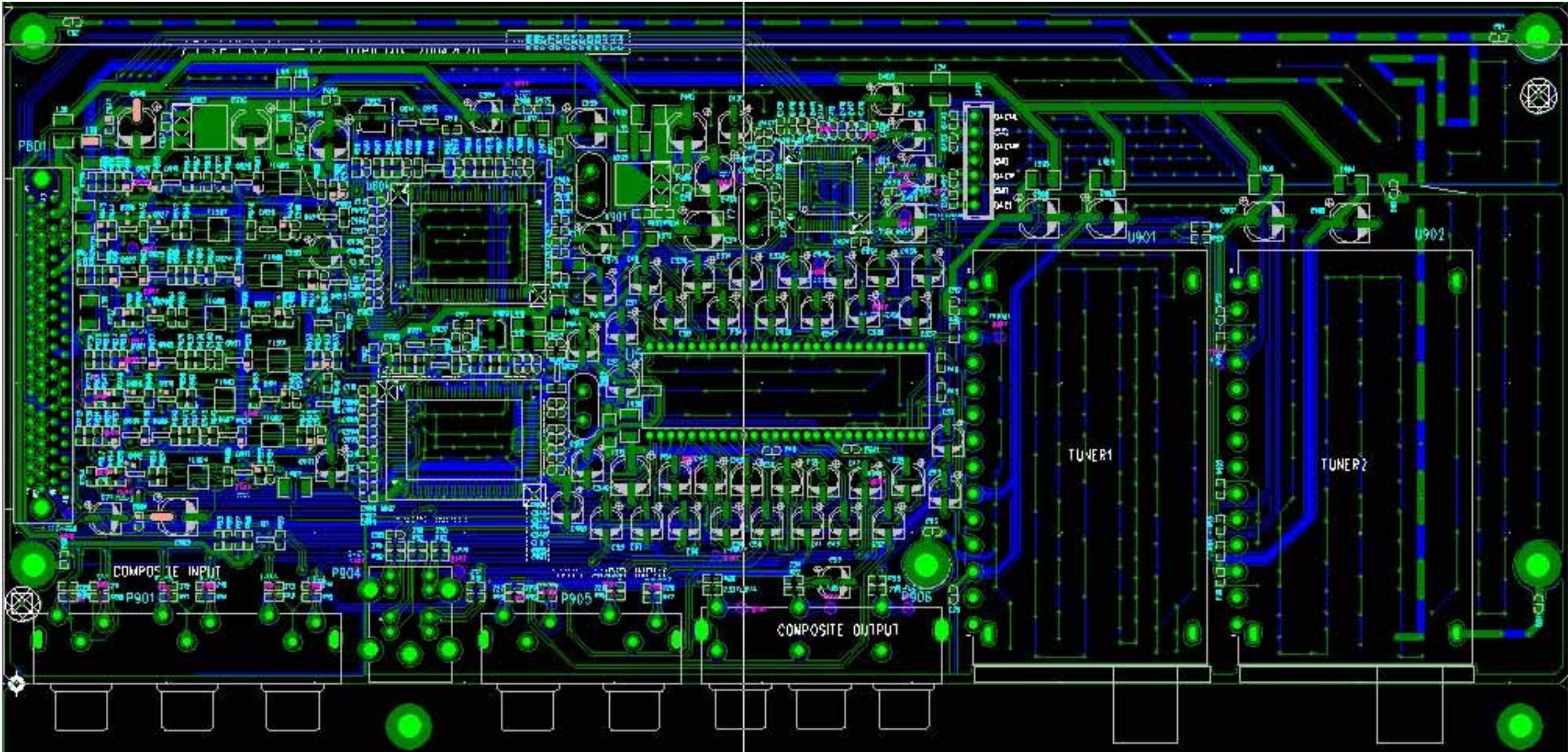
13、PCB LAYOUT
13-1 Image board PCB LAYOUT



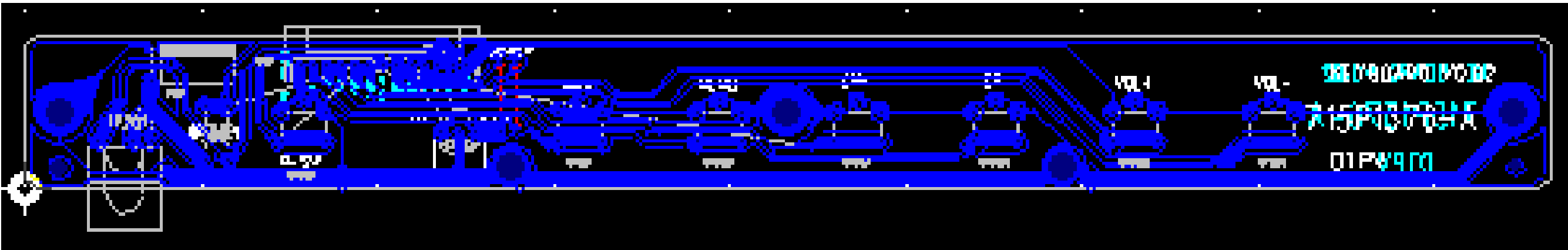
13-2 Audio board PCB LAYOUT



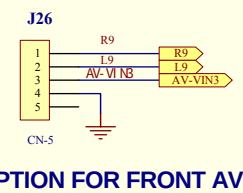
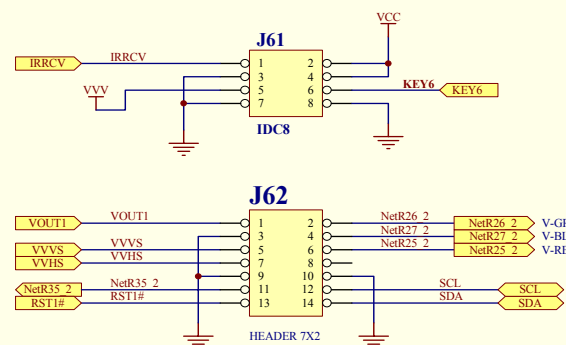
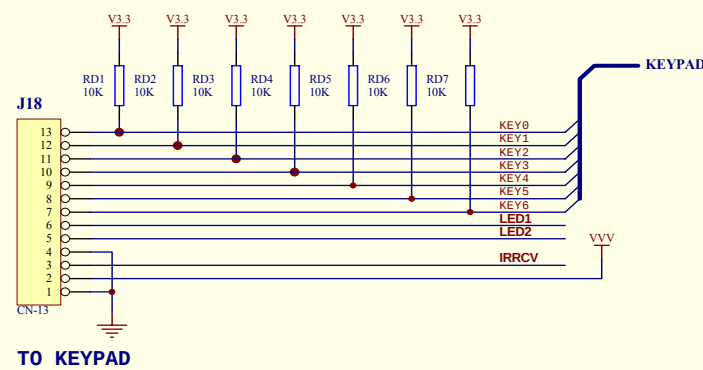
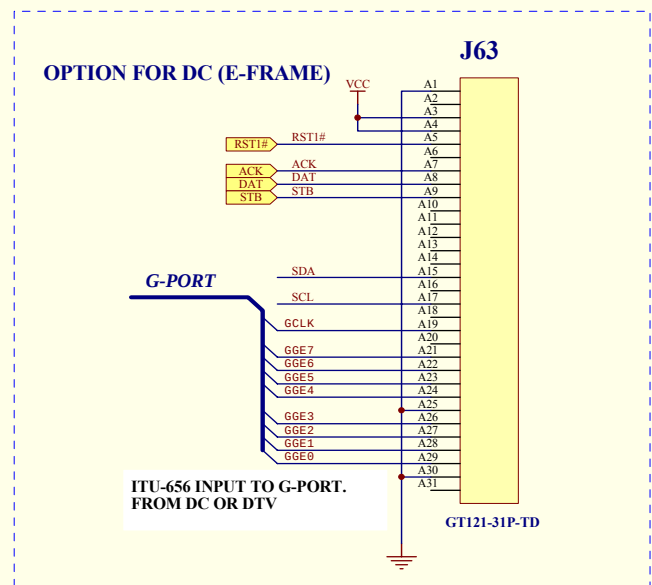
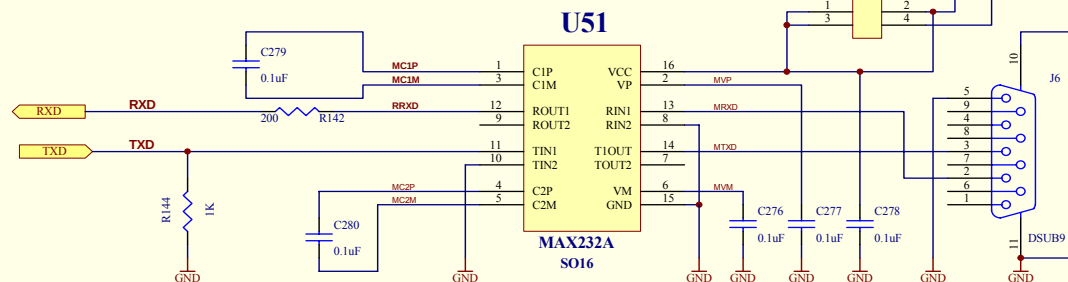
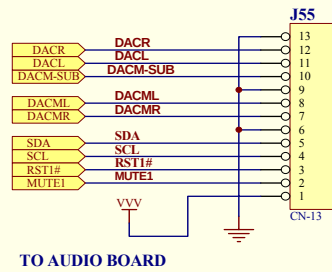
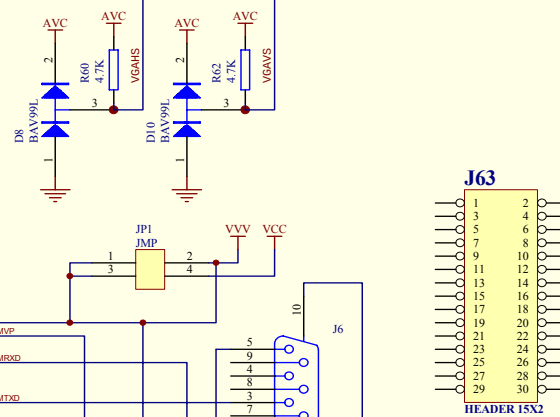
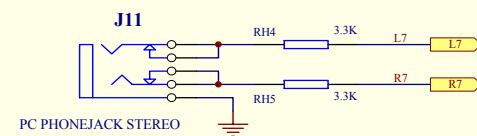
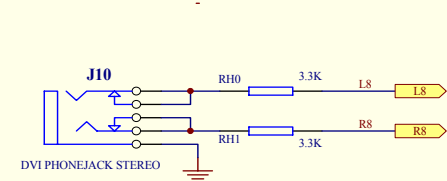
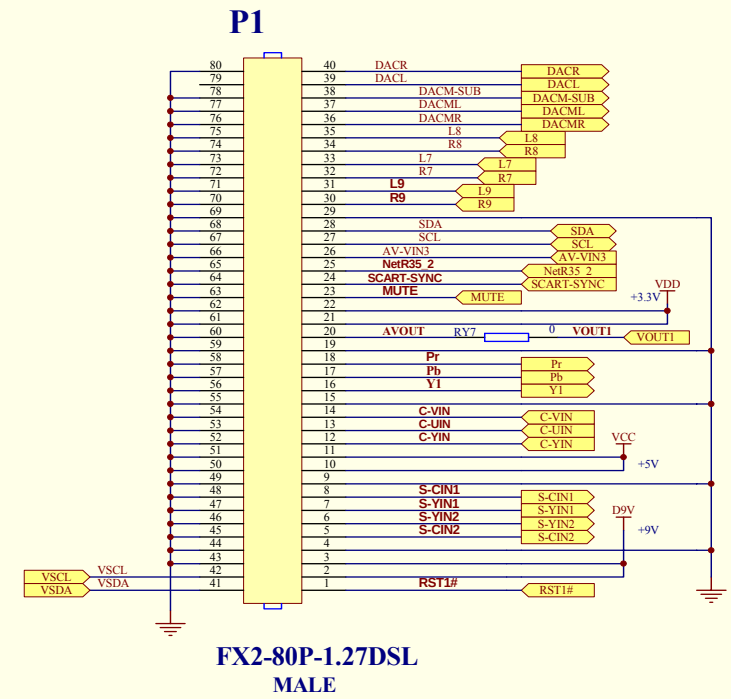
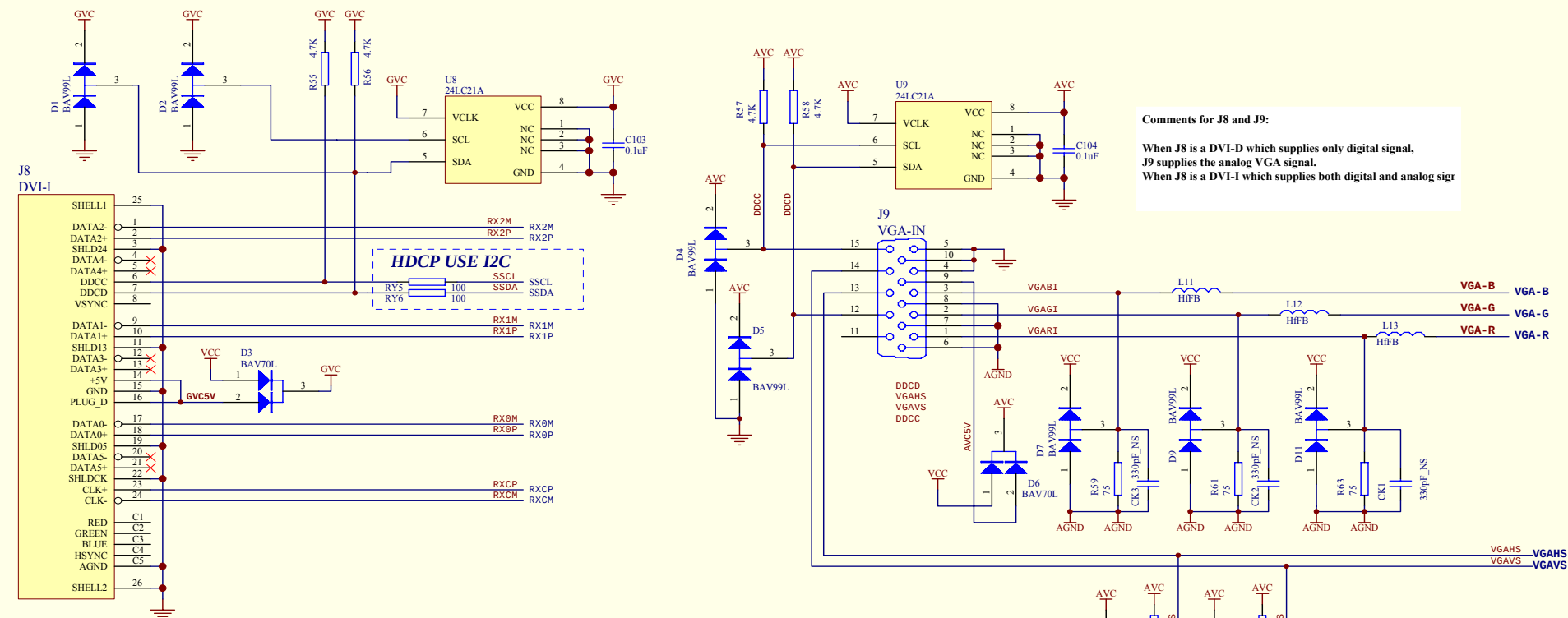
13-3 Tuner board PCB LAYOUT



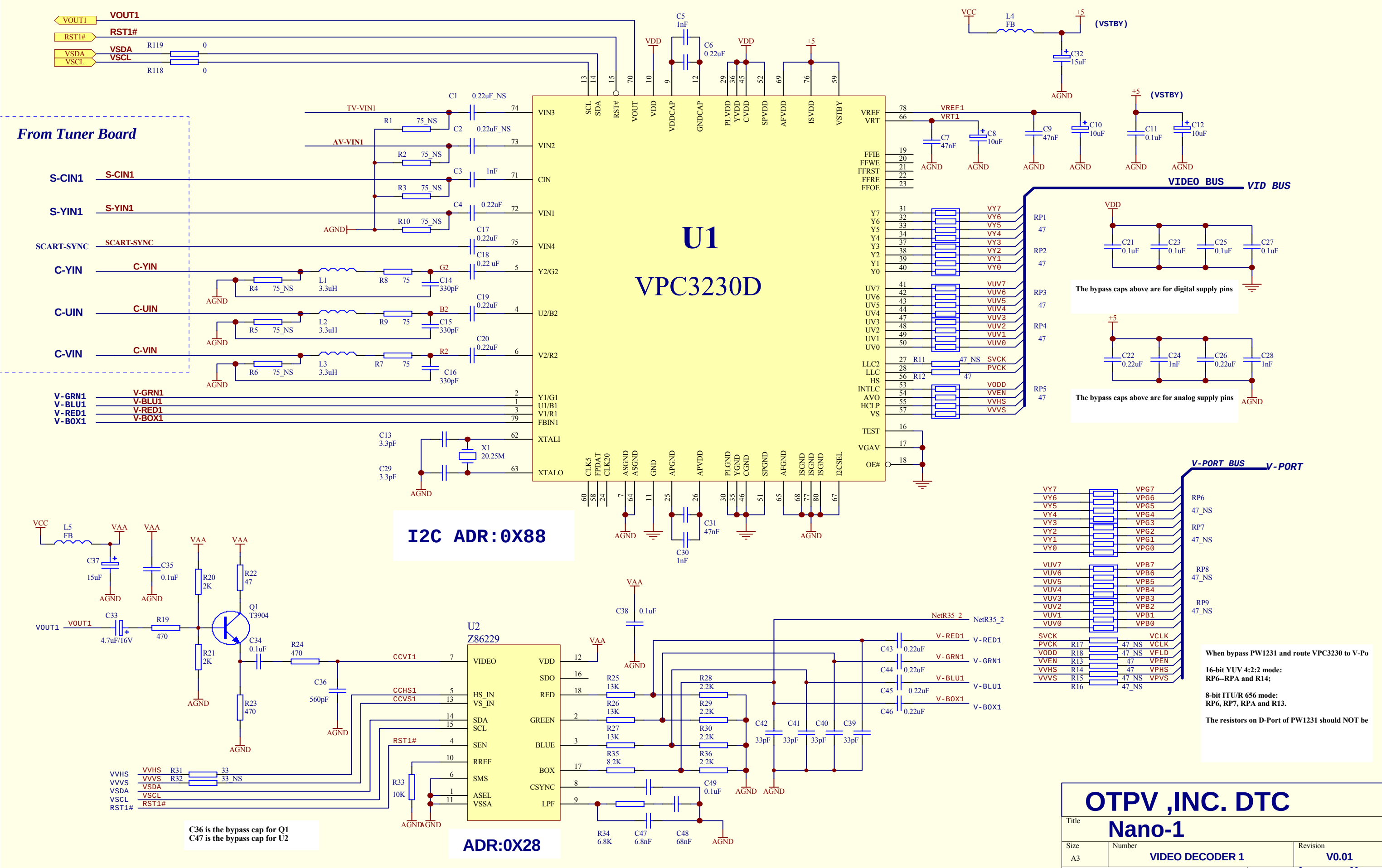
13-4 Key board PCB LAYOUT

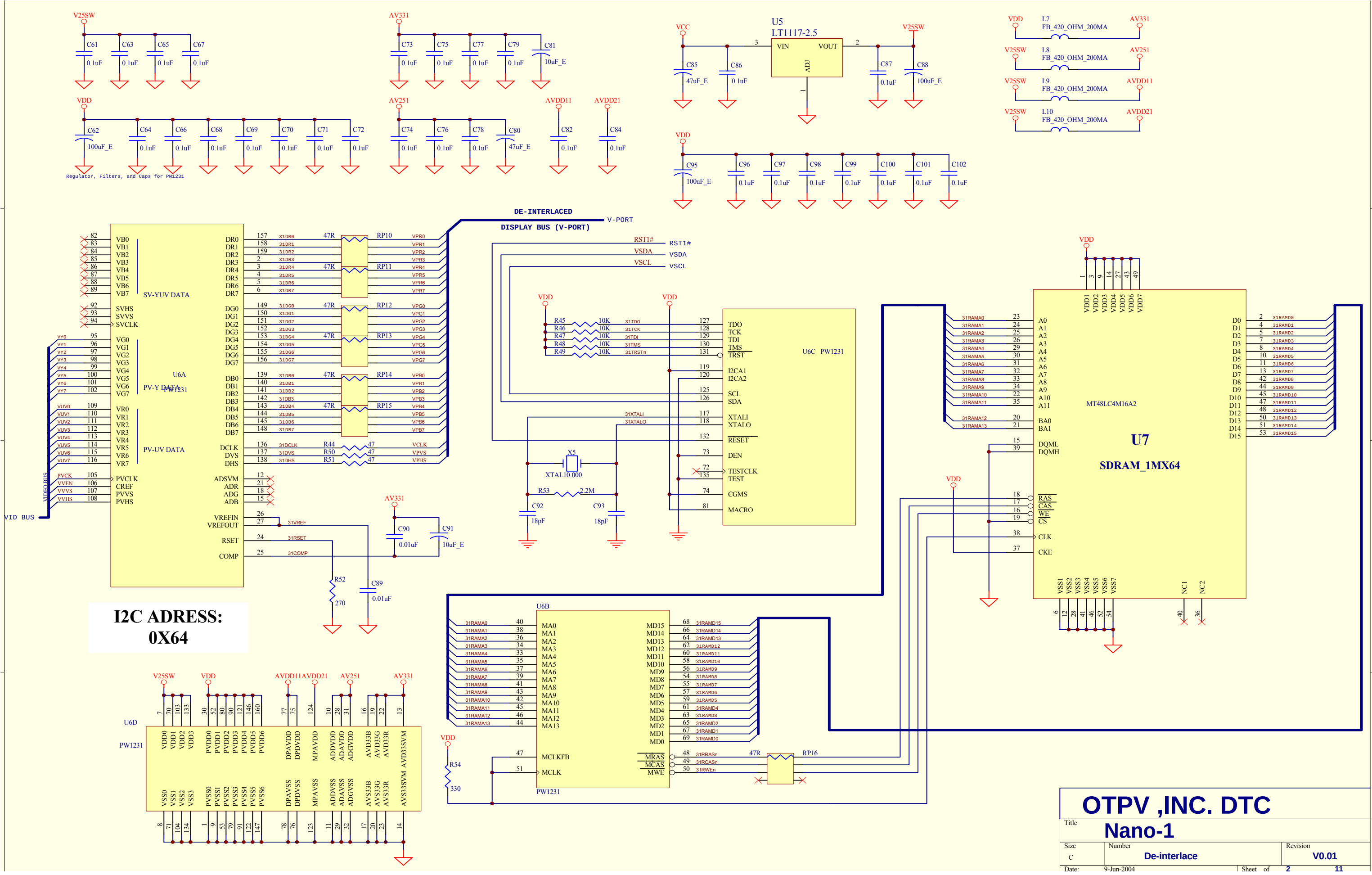


14、 Schematic diagram



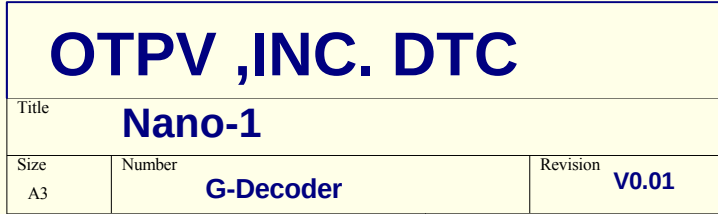
OTPV ,INC. DTC		
Title Nano-1		
Size A2	Number CONNECTOR	Revision V0.01

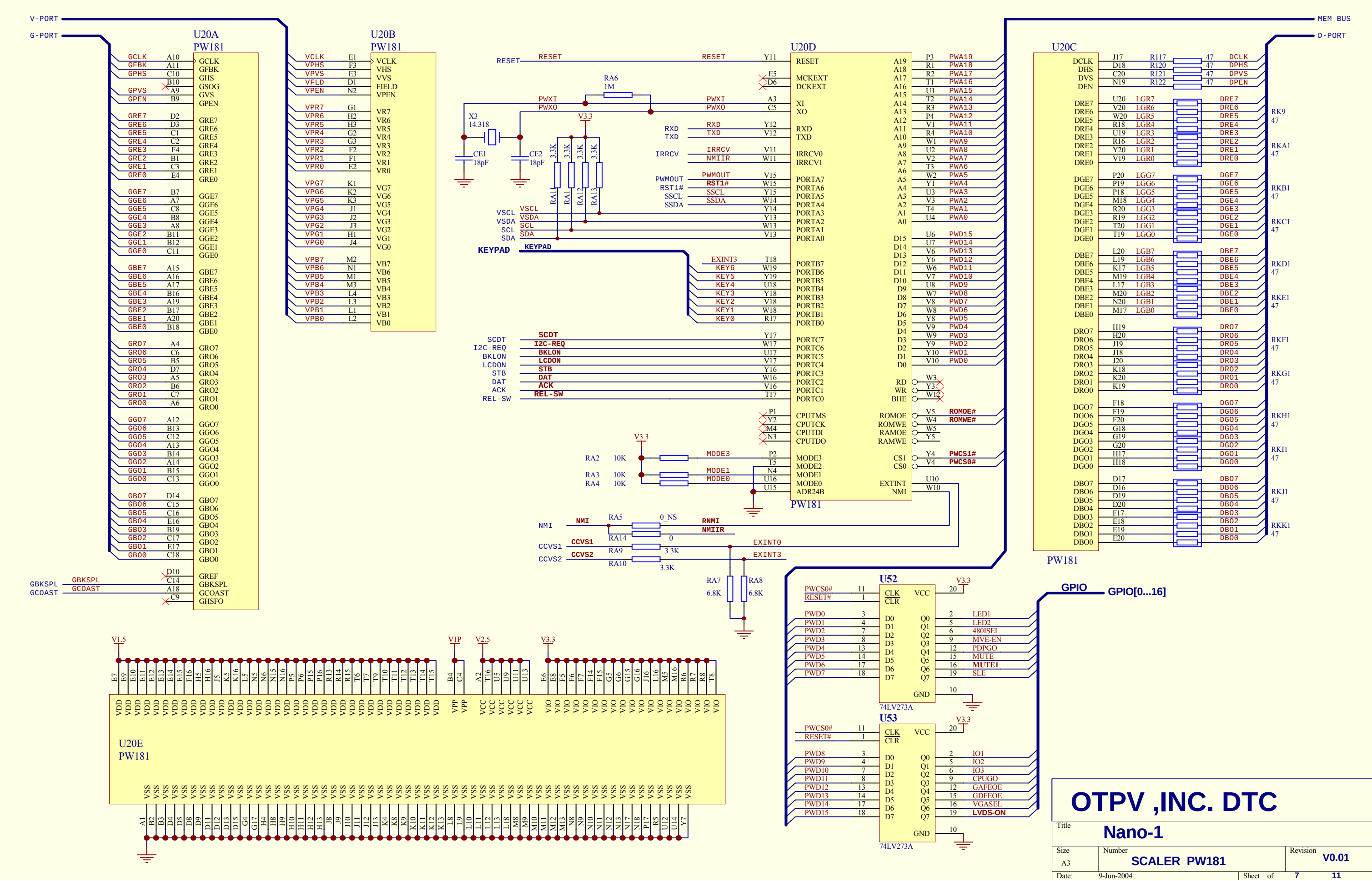


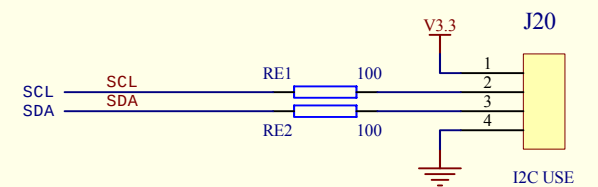
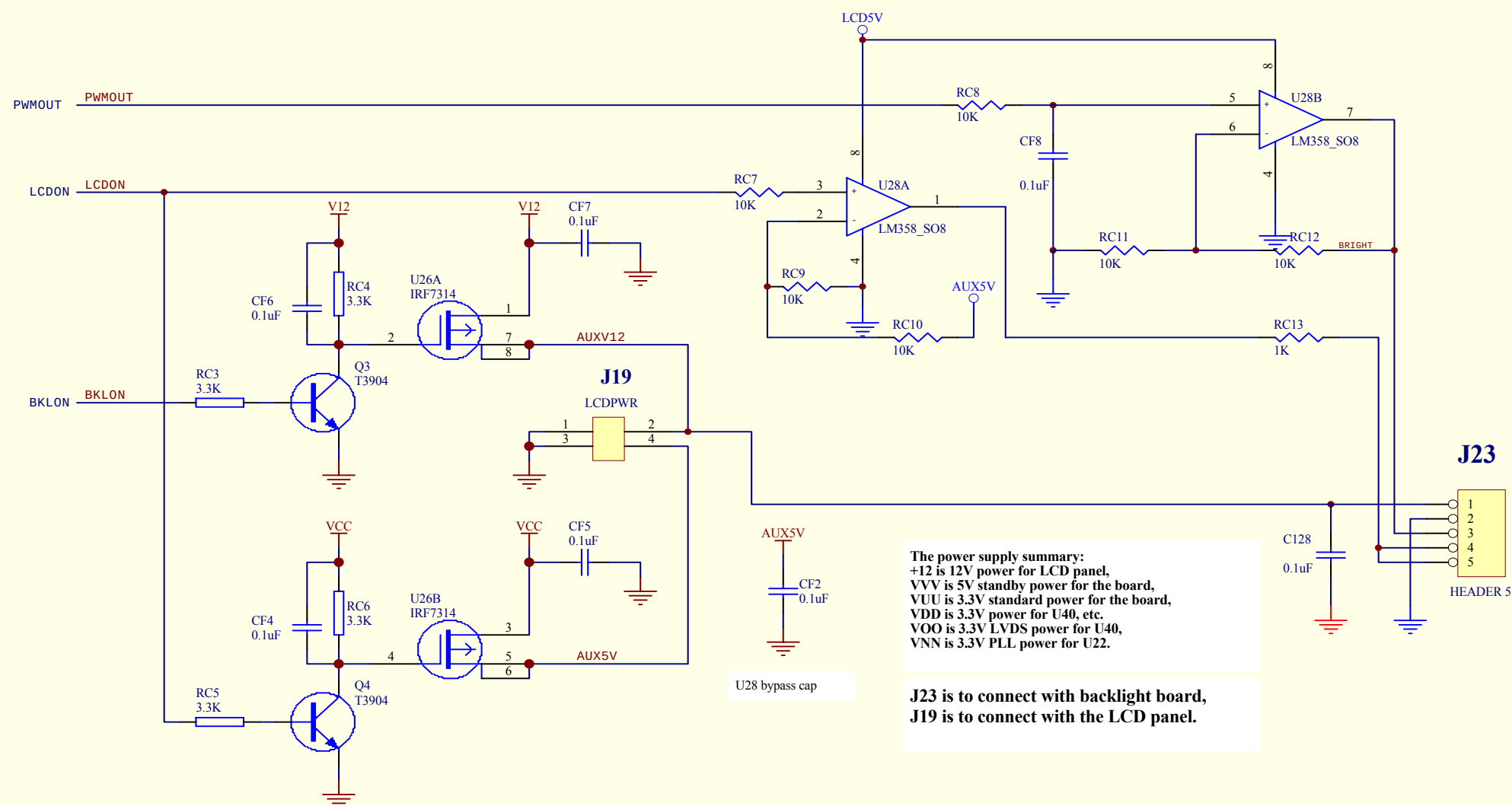
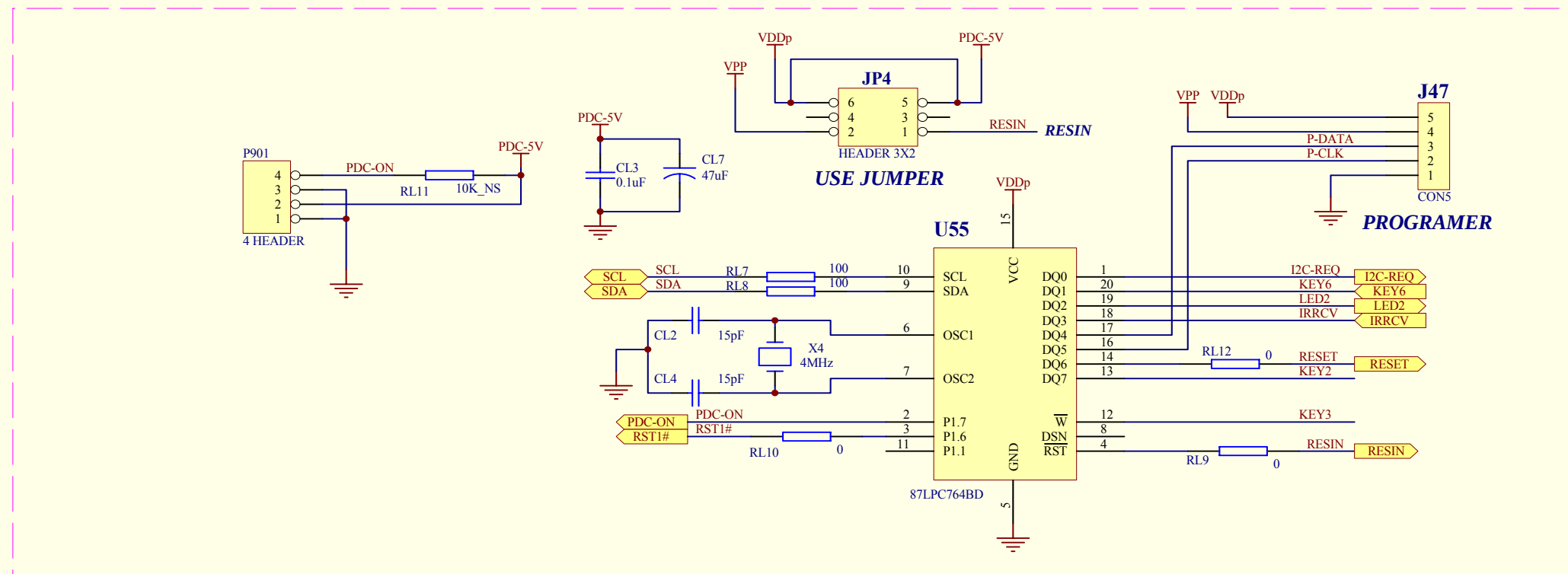


I2C ADDRESS:
0X64

OTPV ,INC. DTC			
Nano-1			
Title	Number	Revision	
Size	C	De-interlace	V0.01
Date:	9-Jun-2004	Sheet of	2 11







OTPV ,INC. DTC

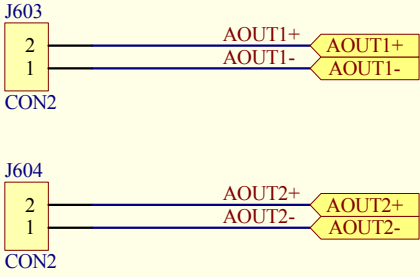
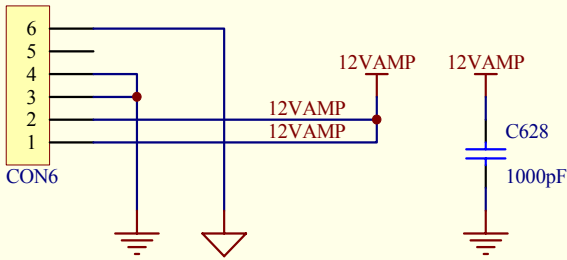
Title
Nano-1

Size
A3

Number
LCD CTL AND PDC

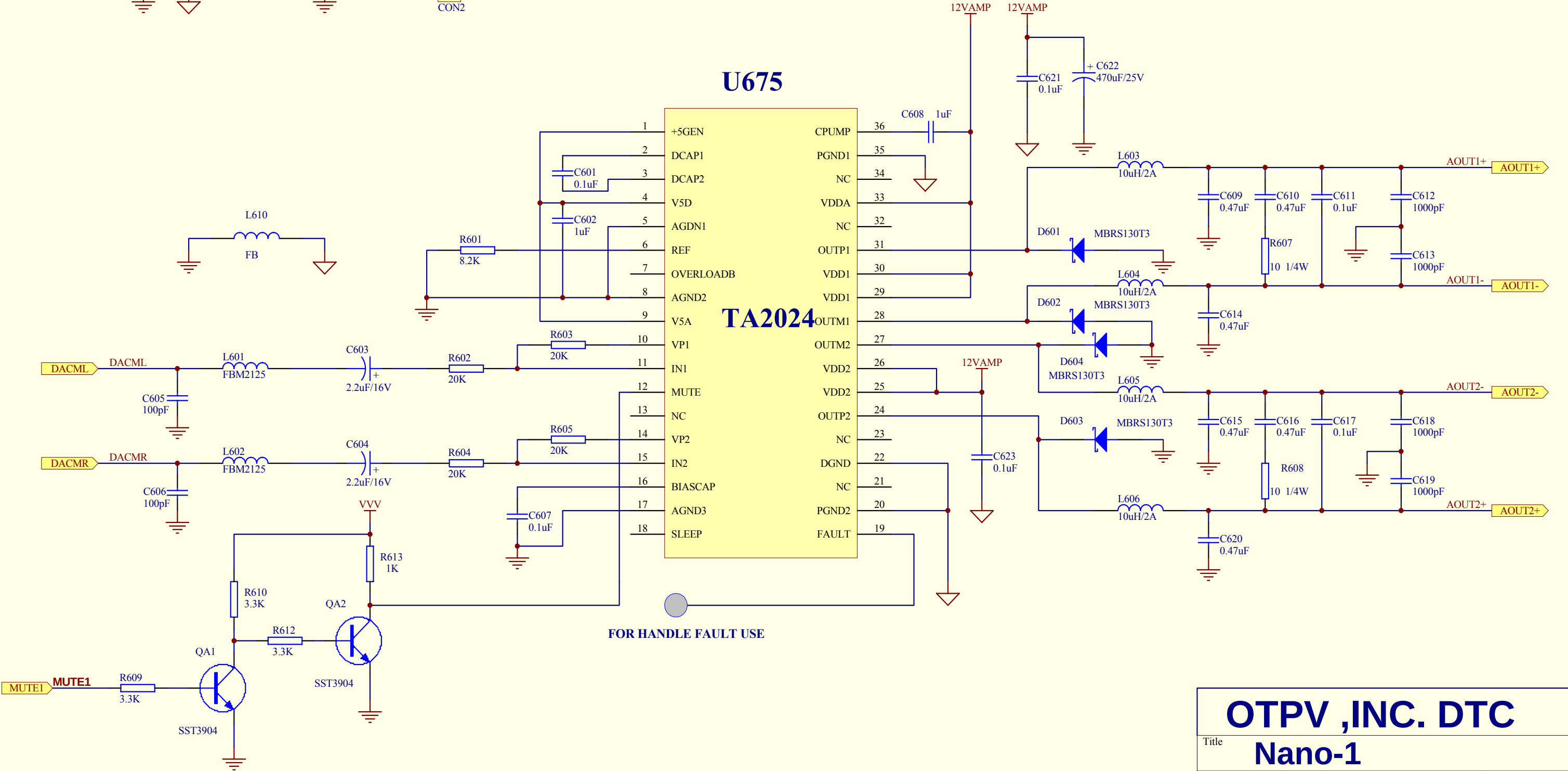
Revision
V0.01

P602



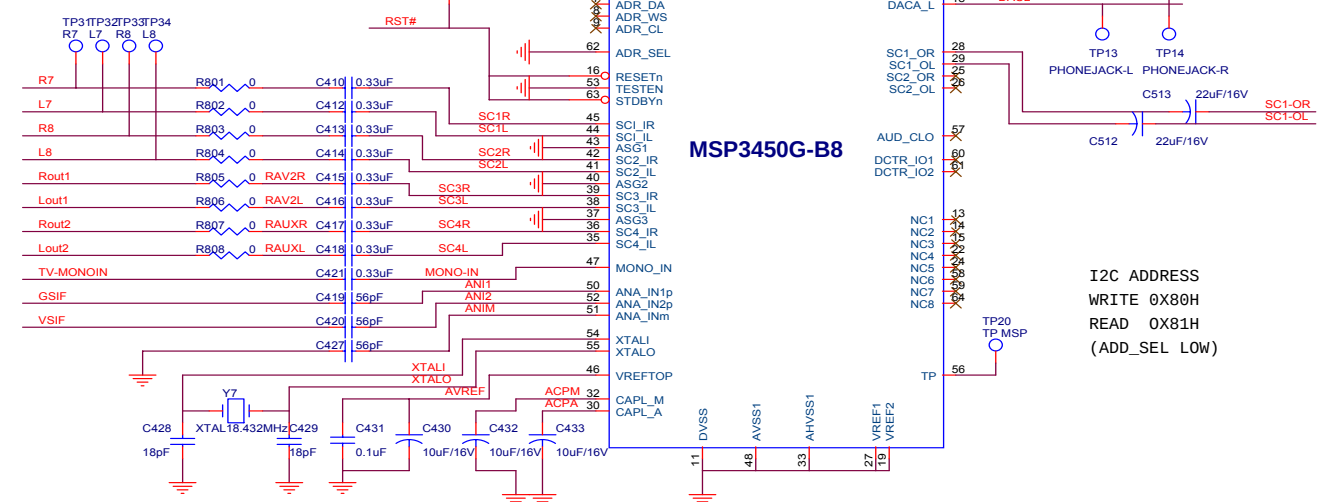
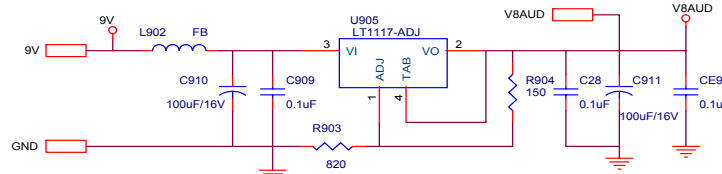
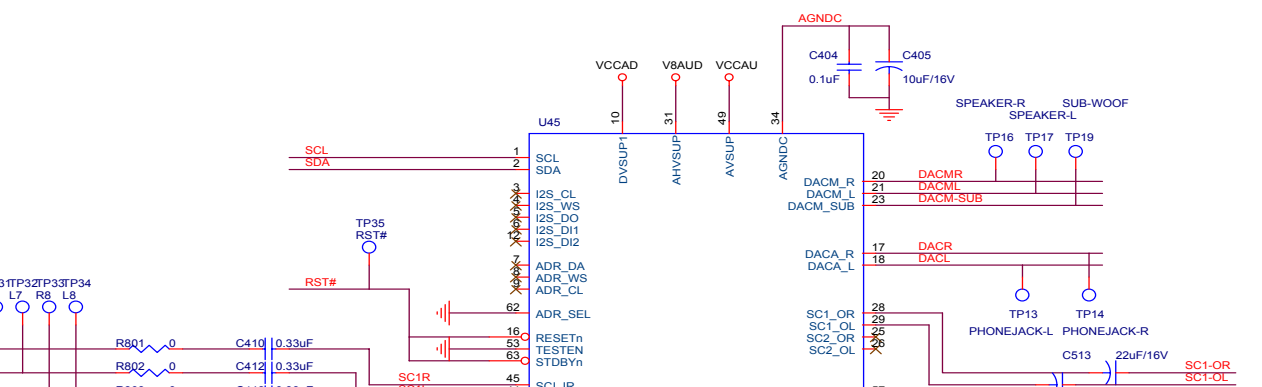
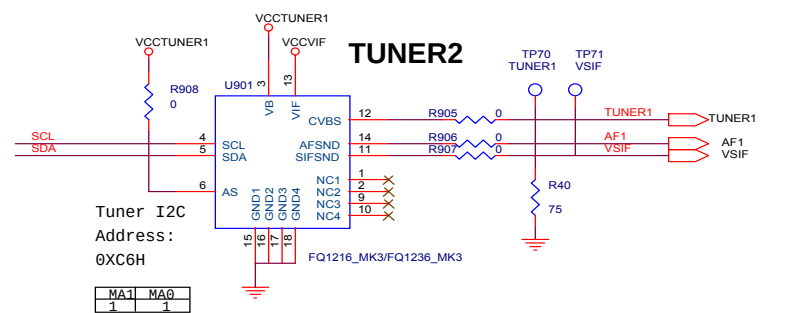
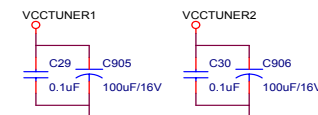
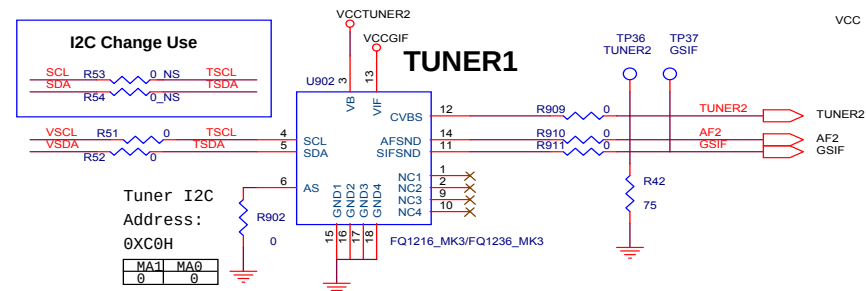
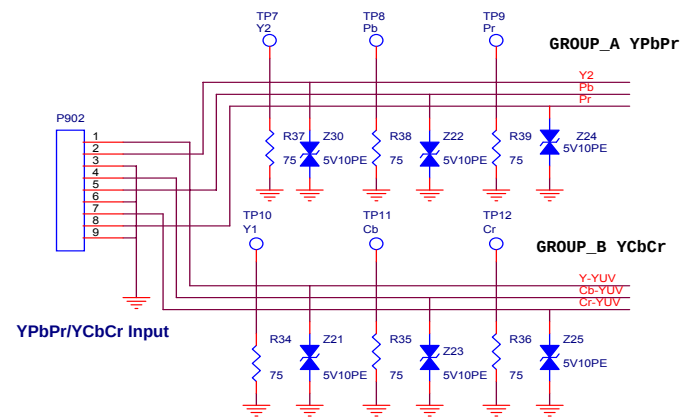
U675

TA2024

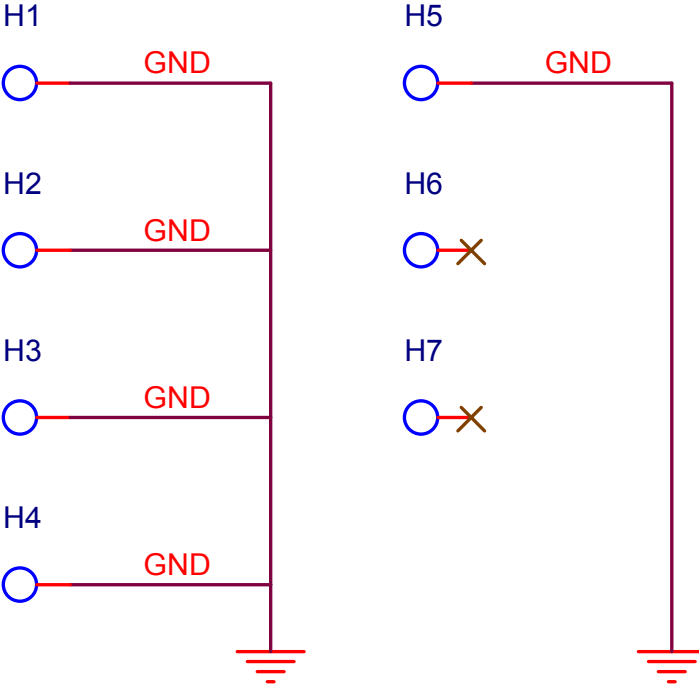
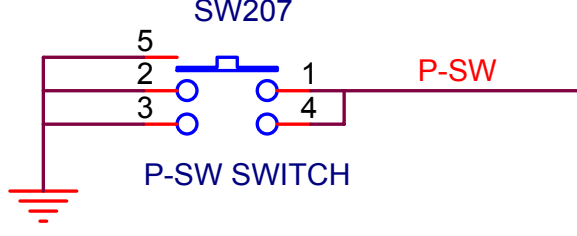
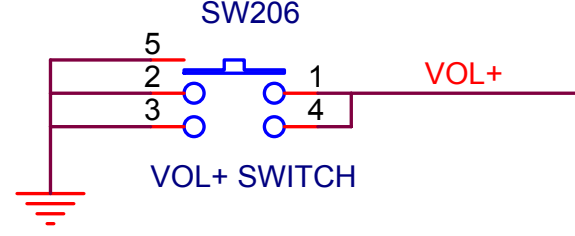
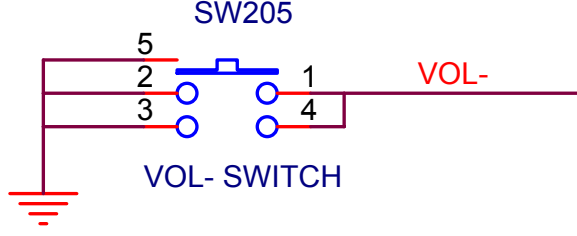
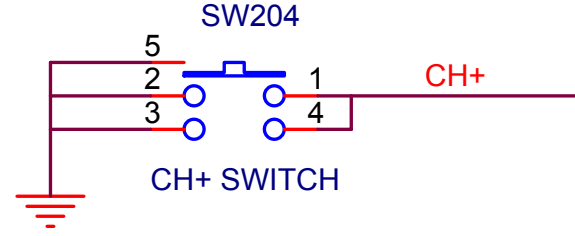
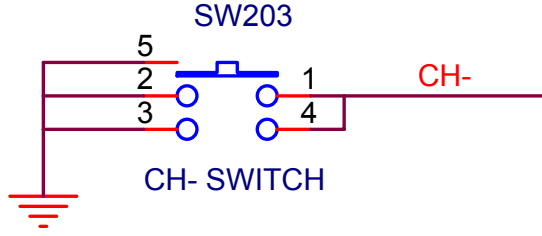
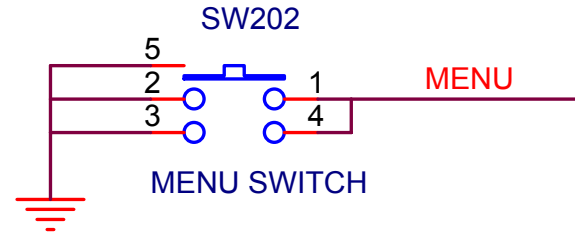
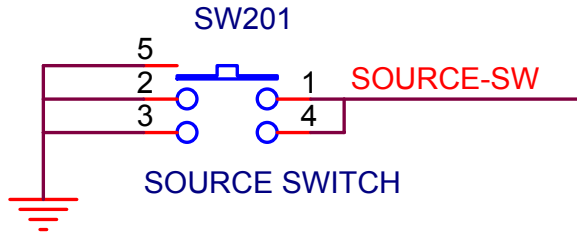
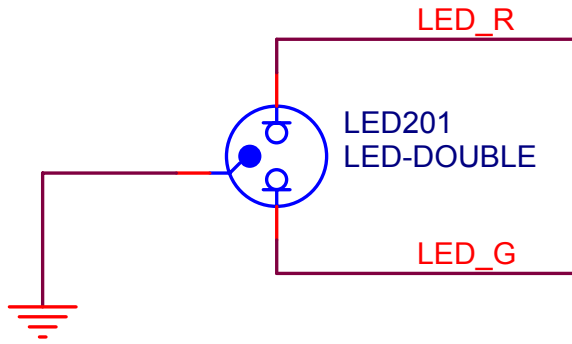
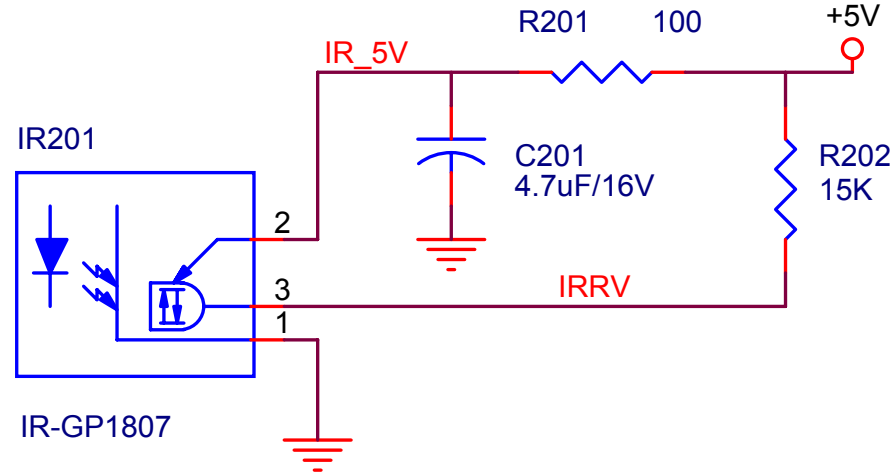
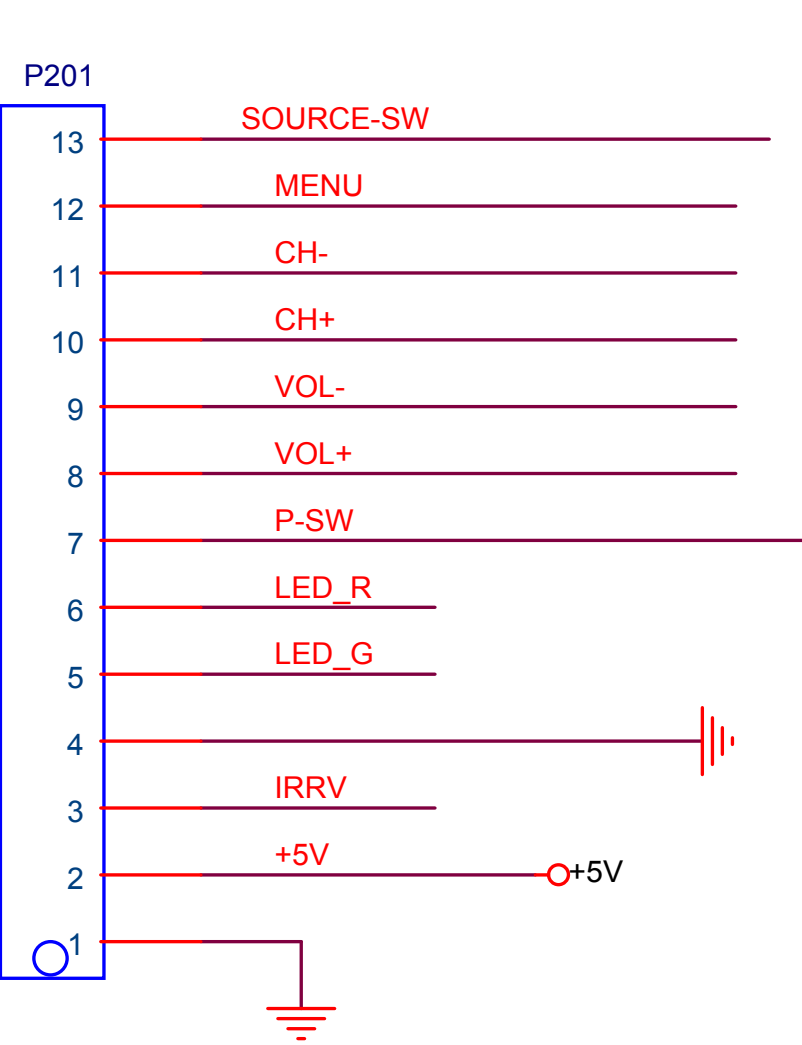


OTPV ,INC. DTC
Nano-1

Title	Number	Revision
	AUDIO AMP TA2024	V0.01



```
I2C ADDRESS
WRITE 0X80H
READ  0X81H
(ADD_SEL LOW)
```



DWG.NO:	715P1376-A	设计	
PROJECT:	NANO-1	校对	
		审核	
		批准	